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COMPUTERWORLD

Inside

SYSTEM REVIEW
LAN managers are eagerly eyeing Novell's NetWare 4.0. But our Firing Line evaluation reveals it is not a plug-and-play upgrade. NetWare 4.0 requires plenty of up-front, managerial planning to meet its promise. *Page 60*

TAXING TIMES
The IRS faces many challenges in its Tax Systems Modernization program, but it has made some important strategic improvements during the past year, including plans to deploy two document imaging systems in time for the 1994 tax season. *Page 20*

USER SUPPORT
Vendors are responding to user calls for better support. At its Enterprise Computing Conference last week, Apple laid ont a series of service and support packages. *Page 12.* **Hewlett-Packard** told Interex members it will revamp ite ordering process and slim down bulky contracts. *Page 10.* **Sun** will unveil "one price per box" service to ease tracking of support contracts. *Page 1*

Cisco offer could avert routing tiff

Overture made to IBM, competitors

By Elisabeth Horwitt

■ Ie an unexpected hatchet-burying move, Cisco Systems, Inc. last week proposed working with IBM end other keyrouter vendors on a staedard for routing IBM's SNA traffic over TCP/IP backbones, which would be based on IBM's Data Link Switching protocol.

Right now, each vendnr has a different way of providing Systems Network Architecture-oriented services that classic Transmissioe Control Protocol/Internet Protocol connectinns lack, said Dick Boyle, a program director at Gartner Gronp, Ine. (see story page 55). As a result, some vendnrs' solutions work better than others, and nn two vendors' routers can exchange traffic, he added.

If the initiative realizes its potential, users would finally be able tn install whatever brand nf router works best for a given site or applicatinn and still have the differ-

Cisco, *page 16*

Fat DASD on way

By Johanns Amhrosin

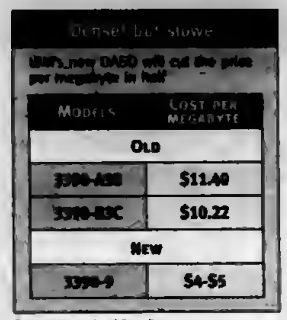
SAN JOSE, CALIF.

IBM will debut a new high-end direct-access storage device next month, offering mainframe customers a choice in magnetic disks for the first time.

The new model will hold more information and cost less than the existing high-end unit but will also be significantly slower.

Some customers said they see no immediate need fnr such a device but might use it down the road. "If it's priced right, it will be just dandy," said Thomas Loane, vice president at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla. "Someone in San Jose finally got the idea that the world doesn't sit on one disk."

Still, as customers and analysts pointed out, Adstar, IBM's storage unit, will likely not have the edge for long. Storage providers Hitachi Data Systems Corp. and Fujitsu America, Inc. are expected to announce competitive products soon after IBM's 3390 Model 9 makes its nfficial debut, slated for May 18.



Source: International Data Corp.

Time for change

Jon Jndge, assistant general manager of marketing at Adstar, refused to comment on the specifics of the announcement but acknowledged that IBM has changed its high-end storage strategy.

"In the past, we provided one [high-end] storage system that was a balance of all customers' requirements," Judge said. "tt'e become obvious that customers really want a series nf alternatives that are optimized for different needs. It's silly to pay for screaming performance if you don't really need it."

The 3390 Model 9, which has

DASD, *page 12*

Sun to bolster support

Program addresses longtime complaints

By Maryfran Johnson

MOUNTAIN VIEW, CALIF

Sun Microsystems, Ine. will nnveil a streamlined and revamped customer support program today that analysts said finally addresses longstanding complaints from users about the quality nf Sun's support.

The SunSpectrum Support Program boils down a hefty price book nf service contracts to a single 8½- by 11-in. sheet of paper. It also introduces "one price per box" contracts covering hardware, software, networking gear and peripherals.

During the past year, Sun spent more than $t million on customer research and focus groups as it redesigned its support program to make it simpler for users tn administer and understand.

Sun, *page 10*

Desktop computing

Tools aid 32-bit push

By Christopher Lindquist and Michael Vizard

REDMOND, WASH

■ Anxious to push new software development nnto the 32-bit platform, Microsoft Corp. In recent weeks has quietly provided at least two tools designed to promote that migration.

Microsoft Windows 3.1 users may begin to nntice that some upgraded applications are running faster than they used tn now that developers have a Windows application programming interface that allows them to take advantage of some 32-bit Windows 3.1 features.

Win32s, a subset of the Win32 API used by Windows NT, was included in last month's release of the Windows NT Software Developer's Kit. Win32s gives developers access to flat memory addressing and can greatly improve the speed of some applications. As an added bonus, applications written using Win32s also run as native applicatinns under Windows NT.

But even using

32-bit, *page 14*

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AMR revamps IS, alters CIO's role: Did Confirm debacle influence moves?

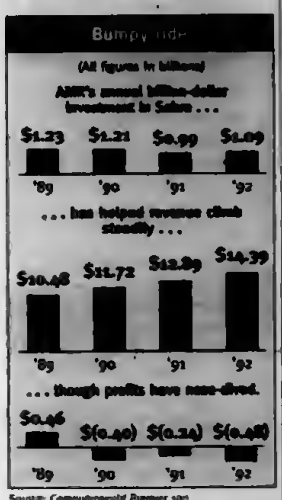
By Nell Margolis

DALLAS

AMR Corp. and its beleaguered subsidiary American Airlines last week lashed five information systems units into one autonomous group that will be led by former Sabre Travel Information Network President Kathy Misunas. Acting as president and chief executive nfficer of the new group, Misunas will take on responsibilities formerly handled by longtime AMR IS executive Max Hopper, whn chairs the new group.

The reorganization, which seemed to raise as many eyebrows as it did expectations, will speed and sharpen AMR's earlier announced focus shift from travel services tn travel-related informa-

AMR, *page 15*



Source: Computerworld Premier 100

[redacted]

CLIENT/SERVER

Hitachi Data Systems enters the open systems market with a server that links its hosts with Unix-based networks. *Page 7.* **Microsoft** readies **SNA Server for Windows NT**, while beefing up an NT version of **LAN Manager** called **Advanced Server** that features multidomain support, enhanced security and TCP/IP support. *Page 4.* First users of **TriCord's** high-end server say they like its power and multiuser support, but the high price discourages some. **IBM** cuts PS/2 Server 295 prices by 30% and unveils a low-end server expected to compete with **Compaq's SystemPro XL**. *Page 14*

OPERATING SYSTEMS

VMS lives, as DEC plods forward with new releases. *Page 6.* **HP's** early bid to open its venerable MPE operating system with Posix hooks is off to a rough start. *Page 10.* Further **IBM OS/2** and **Unix** integration capabilities make up the core of **Unisys'** mainframe introductions made last week. *Page 7*

APPLICATION DEVELOPMENT

Development can get sloppy when hundreds of developers are working with bigger, more complex and modular programs simultaneously. **Configuration management** prevents coders from misplacing and overwriting software. *Page 89.* The development community is sharply divided over the issue of how — and whether — software innovation should be protected. *Page 73*

PC HARDWARE

The president of IBM PC Co. says he's willing to break all the old rules to become competitive. *Page 39.* **Canon's** combination notebook and printer debuts in the U.S. *Page 24*

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Compaq, Microsoft to extend partnership

By Michael Fitzgerald and Christopher Lindquist
WASHINGTON, D.C.

■ Microsoft Corp. and Compaq Computer Corp. will announce a partnership here tomorrow that will see Compaq gain "preferred" status in its dealing with Microsoft, particularly in the realms of multiprocessing and mobile computing, according to sources close to the companies.

Details were sketchy, but sources said Microsoft Chairman Bill Gates and Compaq Chief Executive Officer Eckhard Pfeiffer will expand on the effort that last year produced Business Audio, a hardware and software voice-recognition tool.

One goal would be to produce a plug-and-play PC that would offer the same ease of setup and use as the Apple Computer, Inc. Macintosh.

The deal would also see the two work to develop pen-based computers and personal digital assistants, markets that remain in limbo.

While the two companies have worked closely in the past, this enhanced partnership would make Compaq Microsoft's closest hardware partner, the sources said.

The broad agreement will bear some similarity to agreements Compaq has in place with Novell, Inc. and Oracle Corp. Compaq is a strategic development partner with those firms, sharing personnel and establishing joint marketing and development efforts for products such as Novell's NetWare.

Compaq is expect to bundle Microsoft applications, such as Office, with its products, effectively acting as a distribution channel for Microsoft. Microsoft has a similar distribution deal with Gateway 2000 Ltd.

Microsoft is expected to take pieces of its program with Compaq and extend them to other hardware vendors over time, the sources said. The two companies declined comment but said they will make an announcement tomorrow.

Restructured PC unit

Compaq is expected to put in place a new structure for its PC unit within 30 days. The restructuring, announced last October, will force the layoff of about half of Compaq's estimated 400 field salespeople, sources said. Compaq refused to confirm any details, although it did say a "major" restructuring of the PC business will happen "sooner rather than later."

PowerBuilder may add Intersolv tools

By Garry Ray
BURLINGTON, MASS.

A pending deal between Powersoft, Inc. and Intersolv, Inc. could be the first sign of a new trend in client/server development tools.

Powersoft is negotiating with Rockville, Md.-based Intersolv to integrate that company's PVCS version control software with Powersoft's PowerBuilder, sources close to Powersoft said. Users of PowerBuilder and other client/server tools have long grumbled about the lack of support tools such as version control, configuration management and software testing.

"It's an issue that has been brought up by a number of users and needs to be addressed," said Paul Olson, an analyst at Database Decisions, a consultancy in Newton, Mass.

Sources said integrating PowerBuilder and PVCS would require an Intersolv software component, which would be sold by both Powersoft and Intersolv. Both companies would also sell the range of PVCS version control products, according to sources.

A source close to Powersoft confirmed the negotiations. Intersolv and Powersoft officials declined to comment.

PowerBuilder users said an improved version control system would be well-received. "It would be more than useful," said Rik Brooks, senior programmer analyst at U.S. Intelco Networks. "It would be fabulous."

Powerbuilder's "library painter," included in Version 2.0 last year, had eliminated some problems, Brooks added.

But "now we have fast-fingered programmers like me forgetting to move their code to a new build," Brooks said.

The move could also point to a larger trend in client/server tools, said Peter Kastner, vice president at Aberdeen Group in Boston. "If users want to enter into enterprisewide development projects, version control is mandatory," he said. "Users have been saying they can't go forward with client/server because the support tools haven't been there."

Sources said the alliance will be announced next week at Powersoft's user conference.

NEXT WEEK:

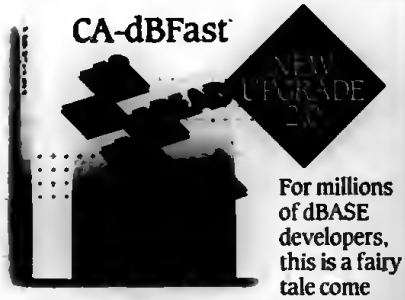
EXCLUSIVE SURVEY

What 203 top executives from premier U.S. corporations say about the role of information technology in their companies

Corrections

- A story in the April 5 issue should have said David Marshall resigned as president of Softlab, Inc.
- The CrossComm Corp. stock offering reported in the March 29 issue will be the company's second offering, not an initial public offering, as was reported.

Beauty And dBASE.



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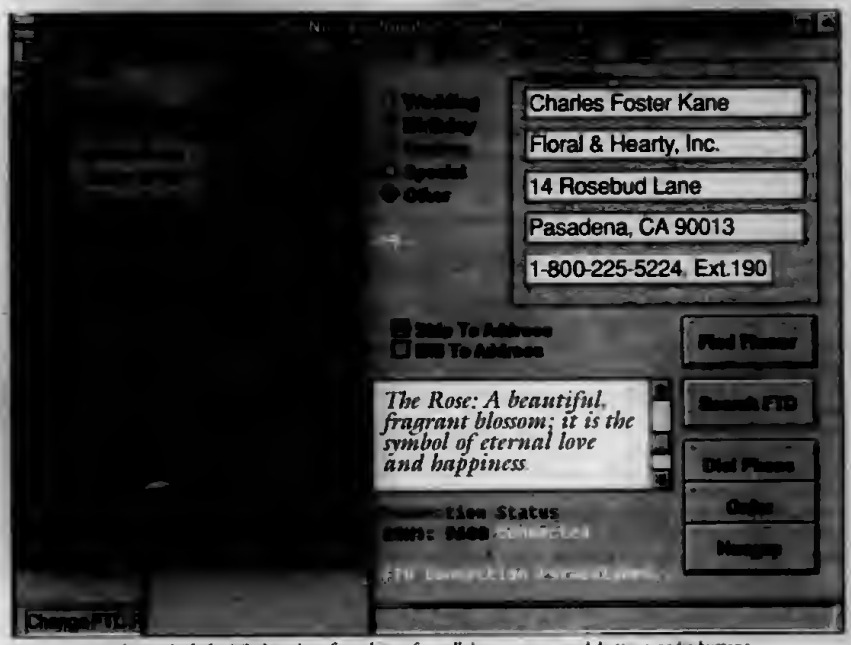
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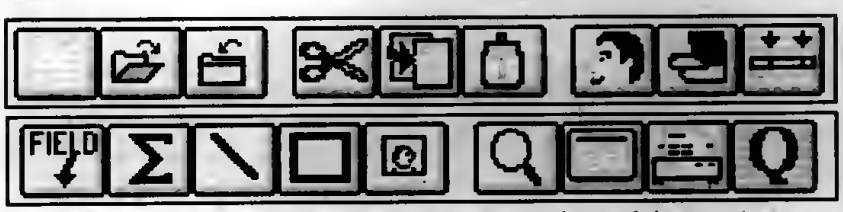

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SNA Server for NT stretches for enterprise

By Christopher Lindquist
REDMOND, WASH

Sending yet another signal that it understands enterprisewide computing, Microsoft Corp. last week announced plans to ship a security-conscious SNA Server product featuring tight integration with its Windows NT operating system.

Slated to ship 90 days after the scheduled late-summer arrival of Windows NT, SNA Server will also spell the end of Microsoft's involvement in the jointly developed, OS/2-based Digital Communications Associates, Inc. (DCA) Microsoft Communications Server product. DCA will continue to support the OS/2 version of Com Server.

Using SNA Server for Windows NT, PCs on a local-area network would connect to one or more Windows NT-based SNA Server machines that would provide shared links to the host using Systems Network Architecture (SNA) protocols such as LU6.2 and PU2.1.

SNA Server would also support a variety of LAN protocols, including NetBEUI, Transmission Control Protocol/Internet Protocol and IPX/SPX.

Any data retrieved by the system would be protected by Windows NT's built-in C2 security, the company claimed.

Initial reaction positive

Microsoft has so far completed some internal testing and shown the product to some developers. While the product has just gone in tn beta testing, SNA Server is drawing an enthusiastic reaction from some quarters, based mostly on Microsoft's specifications.

"It's something we will definitely be evaluating the moment we get it," said Doug Farmer, lead LAN administration and systems integration at Chevron Canada Ltd.

Farmer said he is happy with the DCA/Microsoft Com Server that Chevron is using to connect networks to multiple mainframes. However, it is "not as seamless as we might have hoped," he added.

Farmer said he hopes having a version of SNA supported directly on a 32-bit operating system will make his links more reliable. He said the security features in Windows NT should help ease fears about moving sensitive corporate data off the highly secure mainframe.

Other users agreed. "That's one less thing to learn about and support if it's already woven in by the same corporation that's doing the operating system," said Eric Singleton, director of the information systems division at the Orange County Appraiser's Office in Orlando, Fla.

While SNA Server underscores Microsoft's npmarket interests, it is by no means first to market. Analysts noted that other products are available — including NetWare for SAA from Novell, Inc. and the DCA Com Server — that do much of the job already. However, they said tying SNA Server tightly to Windows NT could gain Microsoft the upper hand.

One issue that may arise for some users is the lack of Advanced Peer-to-Peer Networking (APPN) support in the current SNA Server.

Microsoft said SNA Server will support APPN as a "low-entry node" or the most basic level with this version.

NT LAN Manager faces uphill battle

By Michele Dostert
REDMOND, WASH

■ While beta-test users are enthusiastic about the networking component of Microsoft Corp's Windows NT, industry watchers said they doubt an NT incarnation of LAN Manager will gain immediate converts.

Windows NT will be offered in two editions: the Desktop version, which will be Windows NT with somo peer-to-peer networking thrown in, and tho Advanced Server version.

Advanced Server constitutes a major rewrite of LAN Manager Version 2.X and is based on the 32-bit processing power of NT. Key additions to the software include enhancements in security, multiprotocol connectivity, performance and multidomain directory services.

Microsoft is emphasizing Advanced Server's compatibility with Novell, Inc.'s NetWare and Banyan Systems, Inc.'s Vines, hoping to carve out a niche as a "good citizen" high-end application server in NetWare and Vines networks.

For example, a new, faster 64-bit file system, called NT File Service, improves network-critical file access times, according to beta-test users; and long file name support increases the number of users from 256 to an unlimited amount. A thread scheduler will let network managers tune Advanced Server for optimal perfomance in their environment.

Advanced Server comes with both NetBEUI and Transmission Control Protocol/Internet Protocol (TCP/IP) stacks. An open architecure allows the loading of different protocol stacks, snch as NetBEUI, TCP/IP or Novell's IPX/SPX, simultaneously. Novell has promised that its NetWare for NT requester, which can be loaded on both desktop NT and Advanced Server, will ship simultanconsly with NT.

"Advanced Server has much better performance than the old OS/2-based LAN Manager," said Doug Farmer, lead LAN administrator at beta-test site Chevron Canada Ltd. in Vancouver.

But will Advanced Server be a hit in corporate networks? Craig Burton, president of Salt Lake City-based consulting firm The Burton Group, said he does not foresee an immediate rush to Advanced Server. "Microsoft will not have a distributed directory service, which both Novell and Banyan already offer, until late 1994 — a year and a half away, which is too long to be behind the technology ourve," he said.

Advanced Server has domain-based, rather than global, directory and security services. A new "trusted domains" functionality allows administrators to replicate nsers' profiles and rights acróss all domains in the onterprise.

But while both Vines and NetWare 4.0 replicate the same hierarchical global directory across every server attached to the network, Microsoft's directory services are replicated only across every server in the same domain. Users said, for networkwide access, it is necessary to construct a "Primary Domain" of all network users, stored on a single server, which can then be "trusted" by all other domains.

Domain downfall

One problem with this approach is that if a primary domain server goes down, users could be trapped within t beir own domain.

Microsoft's LAN Manager users are grateful for the new multidomain manageability.

"It's much easier to manage than the old single-domain scheme was. I can set np a user once, in a single domain, and fhen give him access to all other domains bo needs from a single log-in, without reentering the information on every server," said Claude King, a beta-test nser and senior systems analyst at the University of Florida in Gainesville.

There are other issues. For exampio, Microsoft acknowledged that some planned pieces of Advanced Server, such as data compression and support for double-space disk drives, will not be ready for the first release, although redundant arrays of inexpensive disks-5 support will be included.

In addition, many third-party device drivers will not be ready when Advanced Server rolls out.

Microsoft tightens Mail link to NetWare

By Lynda Radosevich
BEDMOND, WASH

In a move that some network administrators said is long overdue, Microsoft Corp. is tightening weak links between its electronic-mail software and Novell, Inc.'s network operating system. Separately, Microsoft demonstrated its budding work-flow technology (see box).

Microsoft said last week that it is shipping Mail Version 3.2, which includes a utility that lets administrators automatically create user accounts from Novell NetWare's bindery, the database that contains definitions for users and groups. However, many of Mail's biggest competitors in tho local-area network E-mail market have been shipping similar bindery support for some time.

"I've been asking them to do that for years and years," said Ed Wilk, network manager at WHDH-TV in Boston. Now, the television station maintains separate Mail and NetWare directories for more than 200 users. "It just doesn't make sense," he said, adding that the new capability may justify the cost of an upgrade.

"Before, [bindery support] was lower on their priority list, but it's a good move for Microsoft Mail because it integrates them better into the Novell network," said Nina Burns, president of Creative Networks, Inc. in Palo Alto, Calif.

Already playing

Other E-mail market leaders, including Lotus Development Corp., DaVinci Systems Corp., WordPerfect Corp. and Notework Corp., said they have offered bindery support for up to two years.

Microsoft said the new version of Mail, priced at $695 for server software, also includes directory support for Microsoft's LAN Manager network operating system, native support for X.25 networks and the ability to move users between E-mail "post offices" by dragging graphical icons with a monse. Also shipping is a separato Message Transfer Agent (MTA) for $1,995, which runs on IBM's OS/2 and can simultaneously process messaging operations.

For Mail beta-test site Star Enterprise, a petroloum refinery in Houston, the multitasking MTA speeds np directory synchronization operations by up to 20%, said Michael Harrison, a programmer/analyst.

Separately, Microsoft said it is shipping a version of Mail for remote users. Running on Windows, the $195 software is said to allow users to read and creato mossages off-line to save phone line charges.

IDG News Service European correspondent Elizabeth Heichler contributed to this report.

Notes beware

Microsoft demonstrated last week in London its workgroup technology, including forms design software based on Visual Basic and mail-enabled routing for Windows for Workgroups. The firm said the software will enter beta-testing soon, but no dates or prices were given. Microsoft plans to add a database architecture to compete with Lotus' Notes, a London analyst said.

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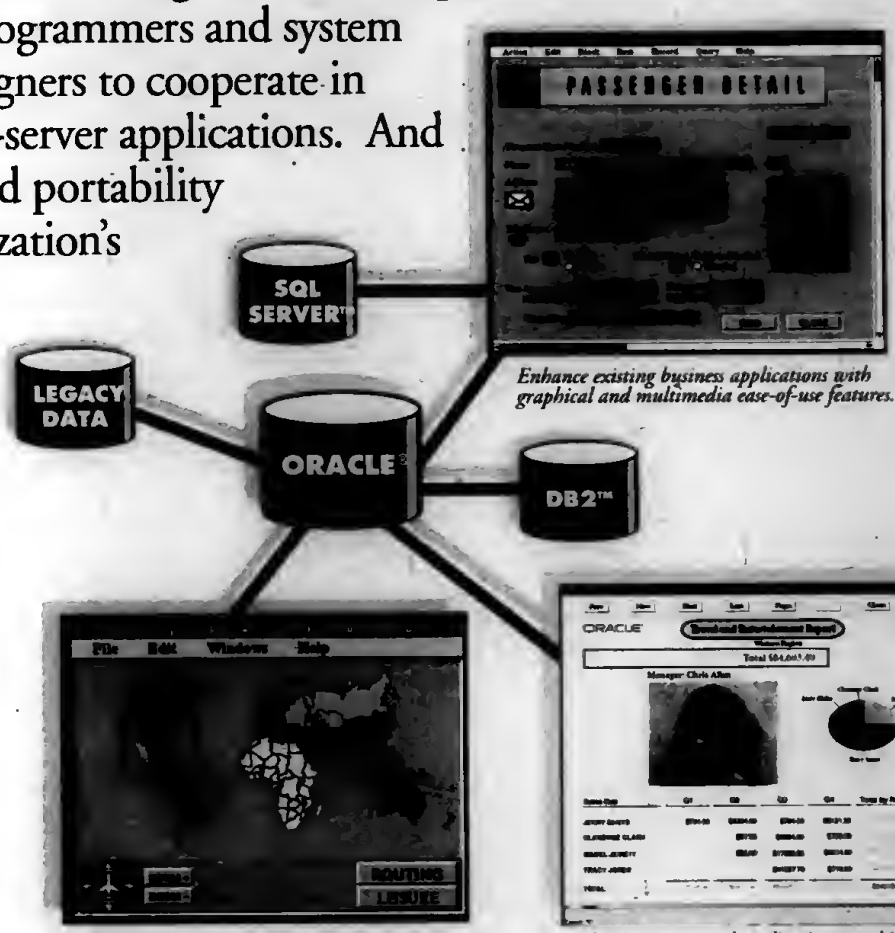

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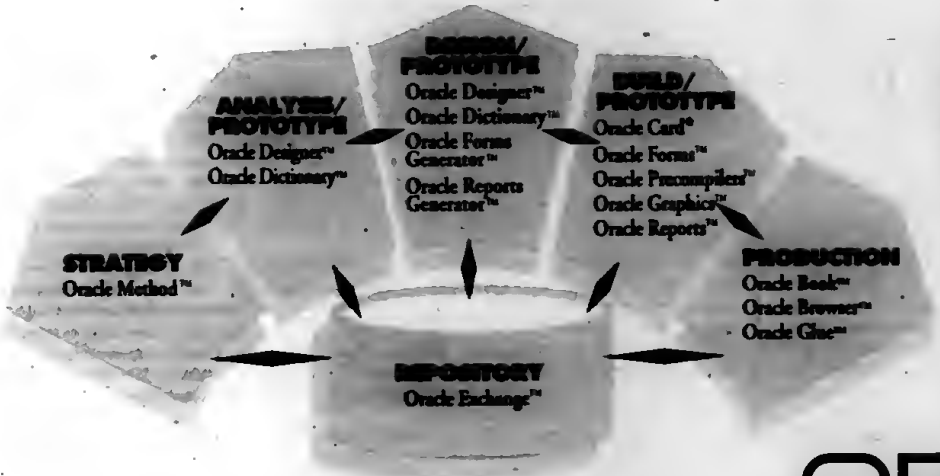

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News Shorts

Stock option reporting rules tightened

In a blow to small high-tech firms, the **Financial Accounting Standards Board** said last week that by 1997 it would require companies to deduct from earnings the estimated value of stock options granted to employees. The options are the only major form of compensation that does not hit the P&L statement. The **Coalition for American Equity Expansion**, a group of computer hardware and software firms, said the proposed ruling would inhibit hiring in an industry that has used stock options as a way of attracting and motivating people in high-risk ventures.

Lotus previews Notes' imaging add-on

Lotus Development Corp., in conjunction with Eastman Kodak Co. subsidiary **Imagery, Inc.**, last week previewed Release 2 of its Lotus Notes: Document Imaging software, a Notes add-on package developed by Imagery that will add support for color and gray-scale images. "We don't see a crying demand for color, but people will use the gray-scale support to add photographs to documents," said Mike Mitsoc, a senior product marketing manager for Notes. Release 2, which is slated to be available early in the third quarter, also includes support for Object Linking and Embedding, an improved Microsoft Corp. Windows interface and better storage algorithms.

Internet group endorses SNMP-2

The **Internet Engineering Task Force** announced last week that it has made Simple Management Network Protocol-2 a proposed standard. **Hewlett-Packard Co., SNMP Research, Inc., Carnegie Mellon University, Digital Equipment Corp.** and **Nynex Corp.'s Allink Division** will participate in an SNMP-2 interoperability demonstration at the Third International Symposium on Integrated Network Management, to be held in San Francisco next week. However, vendors, with the exception of **Sun Microsystems, Inc.** and **Epilogue Technology Corp.**, are not saying when they plan to release SNMP-2 products.

ISDN deployment ahead of schedule

Bell Communications Research, Inc. said last week that the regional telephone companies have accelerated their plans to deploy Integrated Services Digital Network (ISDN) lines. By the end of 1994, 62% of regional phone lines are slated to provide ISDN service; deployment plans issued in June 1992 said that just 55% of total local lines would be able to handle ISDN traffic in that time frame.

Sequent, Isocor team up on messaging

Sequent Computer Systems, Inc. and **Isocor** said last week that Isocor's X.400 messaging products will run on Sequent's Symmetry line of multiprocessing servers. Combined with electronic-mail connectivity software from **The Boston Group, Inc.** and Sequent's parallel-enabled Novell, Inc. NetWare capability, the arrangement will let users run X.400 messaging, X.500 directory synchronization and X.435 electronic data interchange from one high-throughput server. The software is slated to ship in the second quarter. Pricing will start at $7,995.

SHORT TAKES **Texas Instruments, Inc.** announced a scaled-down model of its TravelMate 4000 notebook computer, featuring 4M bytes of memory and a 120M-byte hard drive. It is priced at $3,099. It also cut prices across its notebook line by up to 22%. . . . **IBM** lowered the list price of all its network adapter cards last week, bringing the price of a Token Ring adapter, for example, from $395 to $265. However, wholesale prices remain the same.

News shorts, *page 16*

Imaging takes back seat at AIIM

Tools for building work-flow applications steal the show

By Ellis Booker
CHICAGO

At last week's Association for Information and Image Management (AIIM) show, the industry's leading vendors spent hours *not* talking about document imaging.

Instead, they displayed next-generation, object-oriented development tools for building work-flow applications and discussed systems integration and consulting expertise — either their own or that of their strategic partners.

This change of pace illustrates a desire on the part of document imaging vendors — from IBM to FileNet Corp. to Lotus Development Corp. — to take on a far broader mandate: to become the hot center of the nascent "business process reengineering" software industry.

At the heart of this industry migration is work flow, the software that automates the routing of work such as documents, images, graphics and even sound between individuals and applications.

While a number of development tools for work-flow applications already exist, the upcoming generation of products will add an all-important simulation component to the mix, according to Abigail D. Shaw, an analyst at Shaw-Novinger & Odell in Berkeley, Calif.

"You'll be able to create a model work flow, set test parameters such as the number of documents and see where the bottlenecks are," she predicted. A second feature will be the ability of these graphical tools to spit out code a la a computer-aided software engineering package, Shaw said.

Users, meanwhile, are indisputably eager for work flow to emerge as a way to leverage their investments in technology.

"Long term, we'd like to see a modeling piece that allowed managers to tinker and model their own piece of the business," said Stanley E. Cook, office systems unit manager at Kemper Reinsurance Co. in Long Grove, Ill.

Cook was on the prowl at AIIM for a local-area network-based system that would use the preponderance of 386 (IBM Personal System/2s) or above workstations he already deployed to some 310 employees in the U.S. and overseas.

Eventually, Cook will scan in several million contracts, now maintained in a 75- by 100-ft vault with floor-to-ceiling shelves. "I can easily cost-justify this with what we'll save on paper and microfiche," Cook said. However, the work-flow component is the real magnet, he said.

The universal assessment at AIIM was that users have become much more sophisticated about the core technology of jukeboxes, scanners and optical character recognition software, as well as the subtleties of work flow.

For this reason, there is currently tremendous pressure on vendors to provide these work-flow tools, first to developers, then to company information systems shops and, ultimately, to users.

Not all roses

But proclamations of easy-to-use, object-oriented, work-flow interfaces should be taken with a grain of salt, said Ajit Kapoor, principal at Intelligent Solutions, an information technology consultancy in Marshfield, Mass.

"Object-oriented does not mean icons," Kapoor said, noting that many of the new products have simply put a graphical front end on scripting procedural languages. An additional overlooked problem, he said, is that neither Microsoft Corp.'s Windows nor the Apple Computer, Inc. Macintosh use an object-oriented operating system. "This first generation [of work flow] will be for developers, not end users," he said.

"Most of the stuff we've looked at seems pretty complex," said Todd F. Brandt, a principal engineer at Commonwealth Edison in Chicago, who wants to image-enable 50 users who routinely access regulatory and procedural documents. Like a growing number of users, Brandt is interested in using his future image server as a vehicle to offload certain mainframe applications.

DEC plods steadily into the future with open VMS releases

By Melinda-Carol Ballou
MAYNARD, MASS.

Digital Equipment Corp. underscored a commitment to VMS in its three-headed operating system portfolio last week when it introduced a new version of OpenVMS for Alpha AXP, with plans for 64-bit addressing, and OpenVMS 6.0 for the VAX.

A key feature of OpenVMS AXP Version 1.5 is symmetric multiprocessing, which allows multiple CPUs to share physical memory and other resources. Dual symmetric multiprocessing is available on the DEC 4000 AXP machines, with up to six processors on the 7000 AXP and 10000 AXP systems.

In addition, the software adds VMScluster capabilities [CW, March 21]. Plans for initial 64-bit addressing, which will be beta-tested later this year, will support large databases and files.

OpenVMS VAX Version 6.0 offers more memory, 2G bytes of virtual address space, C2 security certification and other I/O improvements, company officials said.

While some users had been concerned that DEC might back-pedal on development for what had been its premier operating system, disclosure of 64-bit plans for VMS AXP allayed some users' concerns.

"It's a very encouraging sign. Some of the applications that we're investigating take advantage of very large addressing," said Arnold De Larisch, coordinator of computer systems at Florida Atlantic University in Boca Raton, Fla.

Another beta-test user, Larry Finnegan, assistant head of automation services at Cleveland Ohio Public Library, said he is happy with OpenVMS 6.0.

"This was the cleanest install of a major new release that we've ever done. We never before had done an upgrade like this that didn't involve three to four jams to get everything running," Finnegan said. He added that extended memory support was the key point of interest at his site.

"It's a good update. They've been fulfilling their promises on time," said Chris Christiansen, a director at International Data Corp., a market research firm in Framingham, Mass. But Christiansen also raised questions about DEC's long-term plans for operating system development, with a VAX/VMS market that is likely to shrink eventually, and an OSF/1 operating system that now mainly targets the technical market.

Don Harbert, DEC's vice president of OpenVMS engineering, said the company will continue developing versions of OpenVMS VAX for "several years — as long as customers demand it."

HDS serves up link with Unix nets

By Maryfran Johnson
SANTA CLARA, CALIF.

Hitachi Data Systems Corp. (HDS) last week unveiled a powerful Unix server designed to work in large client/server networks. The Osiris Super Server is the first in a series of HDS products that will link HDS mainframes with local-area networks.

Osiris includes a network coprocessor with a Sun Microsystems, Inc. Scalable Processor Architecture (SPARC) reduced instruction set computing engine and HDS' HI-OSF/1-M operating system, an enhanced version of the Open Software Foundation's OSF/1 Unix.

When channel-attached to HDS' EX series or GX series mainframes, the coprocessor acts as a Network File System accelerator and physical interface to the network.

"About 50% of enterprise data is now outside the glass house, and it's growing faster than the data inside the glass house," said James Cassell, an analyst at Gartner Group, Inc. in Stamford, Conn. "There is a true demand [for information systems departments] to regain control and to back up and manage that data. This is Hitachi's entrance into open systems, and it addresses that requirement."

One "market-limiting factor" for the superserver's bid to jump into open systems, however, is that it was not designed to run in conjunction with IBM mainframes, Cassell pointed out.

HDS claims that Osiris delivers four times the data throughput at half the response time of current mainframe network processing technology, making "multiple terabytes" of on-line data transparently available to end users.

At Clemson University in Clemson, S.C., an Osiris server is now linked to an HDS mainframe as a large file server. "We're trying to maximize the value of our current Hitachi mainframe," said Chris Duckenfield, vice provost for computing and information technology. "If the mainframe can play in a Unix environment, then we can use our mainframe as we move toward that environment."

Duckenfield said many mainframe shops also find a certain "comfort level" with products from vendors such as IBM and HDS, "who understand our needs for security and data integrity."

The server is available now, priced at $150,000 for the hardware and from $2,500 to $25,000 per month for software licensing.

Unisys hints at parallel processing

By Thomas Hoffman
BLUEBELL, PA.

Unisys Corp. last week spelled out the firm's initial plans for massively parallel processing computing.

That foundation was laid when Unisys announced that its Single Chip A series Mainframe Processor (SCAMP), which powers the scalable A series product line — including the new A-7 low-end machine [CW, April 5] — can now be cooperatively linked to an Intel Corp. 1486 chip running on a Unisys U6000/65 server.

The SCAMP hosts the A series operating system and handles core application and transaction processing, while the 486 chip supports both I/O functions and the companion operating systems, which can be either IBM's OS/2 or Unix.

John A. Rioux, vice president of Unisys' computer systems group, said the vendor plans to usher in a new high-end A series machine — perhaps a Model A-21 — in one year that would likely contain at least midlevel parallel processing capabilities running Unix and OS/2.

Company executives were unable to speculate on the cost of such a machine.

The A series and Unix-based U6000 platforms can now be linked via Unisys' Cooperative Computing Environment (CCE). By running CCE over an Extended Industry Standard Architecture bus, applications can be optionally integrated over parallel environments.

Data retrieval

Sybase gateway taps distributed RDBMS

By Melinda-Carol Ballou
EMERYVILLE, CALIF

Sybase, Inc. last week made good on earlier promises by releasing a gateway to access data residing across Sybase SQL Server, Oracle and DB2, as well as RMS and ISAM flat files.

OmniSQL Gateway uses Sybase's OmniSQL Server as its engine. The engine comes with an SQL parser and optimizer and was built with Sybase's Open Server applicatioo tool kit. It comes standard with access to Sybase SQL Server, RMS and ISAM files.

Separate modules provide access to Oracle Corp.'s relatiooal database management system and IBM's DB2. The gateway is the first in a series of products that Sybase will market as the Sybase t0 family of products [CW, Nov. 23, 1992].

The gateway includes support for Global Stored Procedures for incorporating business rules and optimizing queries and transactioos across multiple databases, officials said. This brings performance benefits, allowing users to encapsulate complex qoeries and reuse code in multiple applicatioos. It also provides a single debugging environment across the various databases, they said.

Indostry analysts said RDBMS vendors in the past have had difficulty developing stable gateways that perform adequately wheo distributing queries across homogeoeous databases, let alooe in mixed environmeots. Bût the Sybase offering may improve oo previous attempts.

"The key thing here is how well Syhase has beeo able to optimize queries and boost performance using special capabilities such as stored procedures," said Rich Finkelstein, president of Performance Computing, a Chicago consulting firm.

Pricing

Sybase OmniSQL Gateway is priced between $2,550 and $102,460, based on platform and number of users. The OmniSQL Access Modules for Oracle are priced between $2,550 and $102,460; for DB2, they range from $51,260 to $102,460. Additional modules for Informix, Rdb and Ingres will ship later this year.

Sybase officials also touted the ease of use of their oew gateway. Because the OmniSQL catalog stores the locatioo of each table for all DBMSs, users do not oeed to know where each type of data resides or which server controls the database, company officials said. It also translates Sybase Transact-SQL into the SQL dialect of the targeted database and automatically joins data from multiple datahases to respond to queries.

Greatest challenges

The biggest challenges to users of the product, according to Finkelstein, are likely to be the manual maintenance of catalogs and single site updates (which will be alleviated wheo Sybase releases a replicated server to automate the update process for remote catalogs this summer) and the need for a sophisticated query optimizer.

"This technology gives Syhase an edge in the market but will only be able to be used for decisioo support," he noted.

And that is what users are doing with the prodoct.

The U.S. Navy's Naval Uodersea Warfare Center in Keyport, Wash., is usiog OmniSQL for a Sybase RDBMS on a Digital Equipmeot Corp. VAX to access corporate data on an Oracle RDBMS.

"Some of it we do in real time and some of it's in batch," said Joo McCall, an electronic engineer at the ceoter. "We oeeded to have a link to perform simple queries, and we didn't have a real-time interface, except for flat-file transfer." McCall added that the performance is "fine" and that the center is likely to use the remote procedure calls to transfer selected data into the Sybase database tables.

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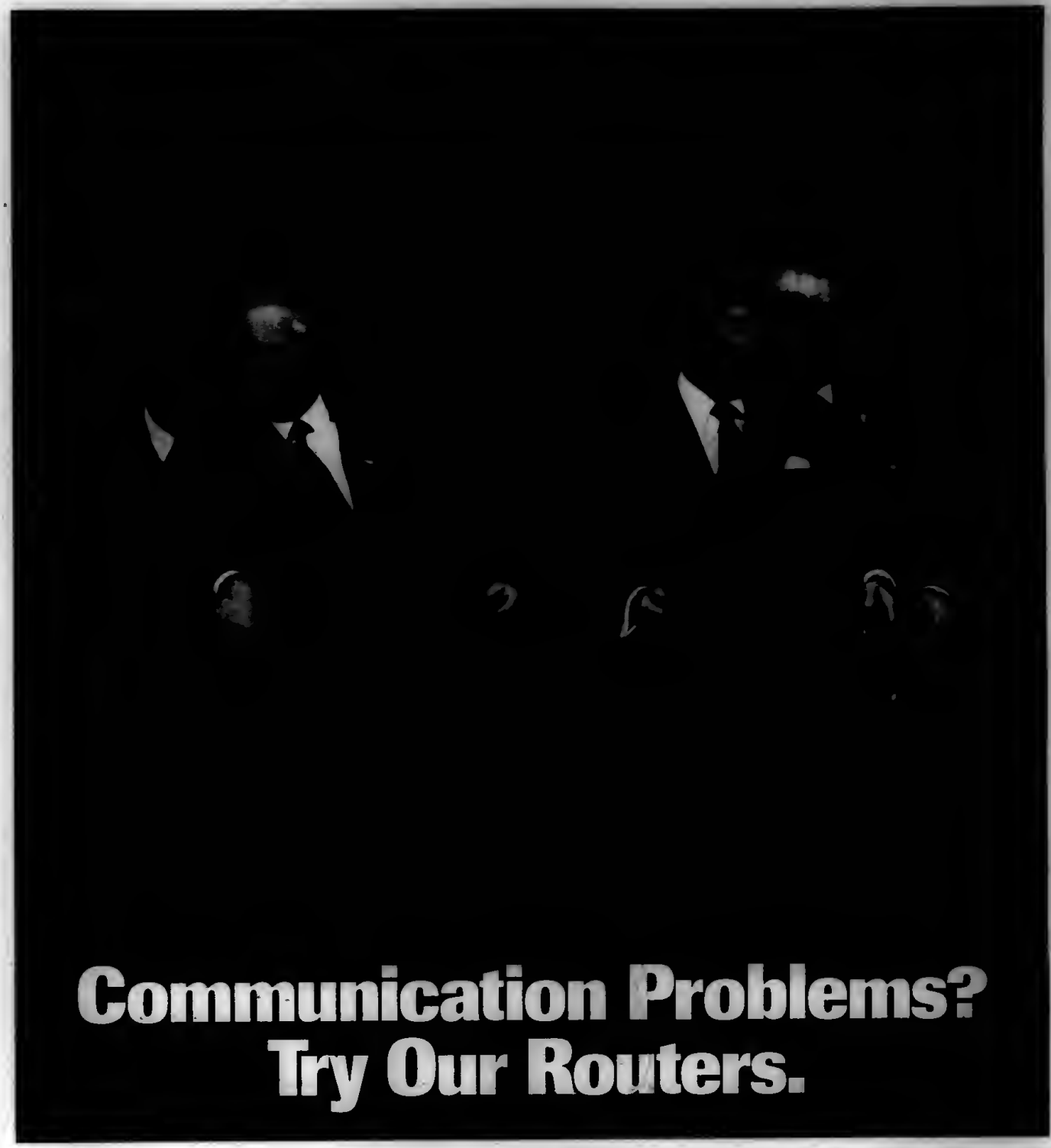

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HP bows to user gripes

Promises shorter contracts, improved order fulfillment system

By Mark Halper
SEATTLE

As users moaned about long lead times, kludgy ordering procedures and convoluted sales terms, Hewlett-Packard Co. last week outlined plans to ease their pain.

The company's program includes migrating its own order processing information technology to a client/server scheme based on HP 3000 minicomputers and a radical shortening of the sales contract to between two and three pages. Contracts can currently run up to 30 pages.

The forthcoming order processing architecture includes artificial intelligence intended to help expedite the proper mixing and matching of the myriad parts a user typically needs when installing complicated, networked, client/server solutions, said HP Americas sales chief Manuel Diaz at the International Association of HP users (Interex) conference.

Noting that HP hopes to convert its order processing system "from a significant inhibitor to a competitive differentiator," Diaz characterized HP's present order processing wherewithal as "possibly our weakest spot." He noted that the company now uses "a combination of systems that make it complicated and inefficient."

Diaz said HP will implement pilot versions of the system next month and plans to be fully operational by year's end.

As with other vendors, orders can now bog down as sales representatives sort out the idiosyncracies of the various peripherals, terminals and network products intended to work with minicomputers, workstations and PCs on any given invoice.

Shipment delays recently drove some users to switch vendors [CW, March 29].

Another gripe is that HP has become a difficult company to work with as it grows its revenue around a reduced work force.

Owning up

HP clearly acknowledged the problems last week, even though just two weeks ago a spokesman downplayed users' complaints and said all deliveries were sitting at six to eight weeks.

Addressing Interex, HP systems and servers general manager Rich Sevcik said that when it comes to order fulfillment, "we know we are not doing as well in this area as we need to be."

Users and resellers at the conference could not have agreed more.

"It's 15 years old, complicated and heavy," said Frosti Bergsson, general manager of High Performance Systems Ltd., a Reykjavik, Iceland-based HP distributor, referring to HP's ordering system.

"They wrote their system in the '70s, and it's time to change," concurred Jeppe Juhl, information systems manager at Guittard Chocolate Co. in Burlingame, Calif.

"HP as a company is fundamentally changing the way it does business," observed Jane Copeland, president of software company Holland House, Inc. and head of the interex advocacy committee. "HP's old system didn't keep up with the company's changes."

HP's present ordering system may not discover a configuration error until several weeks into the process, forcing the customer to wait extra critical weeks while the company corrects the shipment, Copeland noted.

As for shortened contracts, Copeland described HP's planned changes as a shift in corporate philosophy, noting that HP is simplifying language.

Open MPE causing backup problems for users

HP's effort to open its proprietary MPE operating system is off to a rocky start, as users and developers complain that the new Posix-compliant version deviates from the standard MPE file structure, making it difficult to store and retrieve backup data.

Unlike earlier versions of MPE, HP's Posix-compliant MPE/IX 4.5 uses a hierarchical file structure in the Posix portion. As a consequence, backup procedures are different for files created in Posix.

"The applications are not a problem, but the system stuff is," noted Louis Milia, information technology special projects manager at Bio-Rad Laboratories, Inc. in Hercules, Calif.

One MPE developer who asked not to be identified described the move to Version 4.5 as "a migration" rather than an upgrade.

HP 3000 product line manager Pat Adamiak conceded that the move entails "a larger jump than earlier jumps" but maintained it is still easier than moving up with its other operating environments.

Adamiak claimed last week that HP purposely designed Version 4.5 with different Posix backups because otherwise users might store data from Posix that would later be irretrievable on a network system where a user at a different station did not have MPE/IX 4.5.

Under the Version 4.5 design, that second user still cannot retrieve the data, but the user at least knows the data is not lost, Adamiak said.

Users also noted last week that Version 4.5 requires more disk space to support its Posix interfaces, and the Posix version supports only the C language.

—Mark Halper

Sun bolsters support

CONTINUED FROM PAGE 1

Thousands of support price configurations were condensed into fewer than 200 possible fees within four support categories designated as platinum, silver, gold and bronze.

"It's a different approach to maintenance and more in line with what you'd expect for a large commercial installation," said Charles Salmon, director of application development at Fingerhut Corp. in Minnetonka, Minn.

The nationwide mail-order business just signed on with Sun for a client/server project involving four SPARCenter 2000 multiprocessor servers and 400 SPARC-classic desktop workstations.

The availability of a comprehensive support program from Sun "made a difference" in Finger-hut's choice of a Unix vendor, Salmon added.

For Nationwide Life Insurance Co. in Columbus, Ohio, news of the SunSpectrum program was also encouraging.

"We do think they need to improve their support, and we've been working on them about this," said Tim Lyons, director of Investment Products Operators' Common Systems, which manages $16 billion in Nationwide assets on a Sun network.

"We realize they can't be IBM with 20 or 30 people walking around your business, but they can do more than they've done in the past," Lyons added.

One way Sun hopes to set itself apart from its better established competitors is by offering a unique feature called "customer-defined priority setting."

This lets customers determine their own telephone and on-site response times according to how serious the problem appears — rather than having to predict it in advance and contract accordingly.

"We've always asked how severe the problem was in the past, but we never tied our [level of] response to it," said Bill Cote, Sun's vice president of worldwide customer support.

"Sun has really done some interesting things in pioneering areas of the computer industry you wouldn't think of as ground-breaking opportunities," said Laura Conigliaro, an analyst at Prudential Securities, Inc. in New York. "Now they've broken some ground on the support side, assuming they can execute it right."

With 2,000 of its 12,000 employees assigned to service and support roles, Sun cannot match Hewlett-Packard Co.'s 17,000 support personnel or IBM's tens of thousands of customer service engineers. Rather, Sun relies more heavily on third-party partners such as Bell Atlantic Business Systems, Inc. and thousands of smaller resellers.

"Sun is very hard on those resellers who are not competent, who are just box-movers," said Mike Shook, president of Strategic Technologies, Inc., a Sun service partner in Cary, N.C. "But conversely, Sun is very accommodating to high value-added resellers. Suo knows that indirect channels are vital to their growth."

Still, Sun's more technically savvy users tend to forge their own path when it comes to support.

"It sounds like Sun is making it easier for administration purposes, but we figured out the cheapest way to do support — by ourselves," said Steve Ferguson, manager of datavision and geologic applications at Amoco Production Co. in Houston.

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SOLARIS	$35
SBUS-ETHERNET	$20
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Source: Sun Microsystems Computer Corp.

SunSpectrum offers the following four levels of support:

- Platinum: The premier program for complex, mission-critical operations, including 99% uptime guarantees, 24-hour-a-day on-site response and 15 days of customized coaching.
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Enterprise Computing Conference

Apple fills out support picture

By James Daly
SAN FRANCISCO

Oracle Corp's move last week to support Apple Computer, Inc.'s high-end server marks an important milestone on the Macintosh's road to gaining respectability in corporate America, a market in which Apple has traditionally struggled.

Oracle used last Week's Apple Enterprise Computing Conference to announce that its Oracle 7 Cooperative Server database will be available next month for the Apple Workgroup Server 95 running A/UX. Pricing starts at $3,995 for one to eight users, with incremental pricing for larger shops.

The move comes weeks after Oracle pledged to support Macintosh clients as part of its Cooperative Development Environment tool kit [CW, March 15].

"Right away, Apple has a very good server database in its corner and another argument for its client/server approach," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif.

Similar offerings are anticipated soon from major database vendors. For example, Sybase, Inc. announced it will enhance its Deft software engineering tool to support key Apple technologies. Apple also unveiled partnerships with seven client/server tools vendors, including Blythe Software, Inc.

Both announcements are a clear sign to Macintosh users that Apple is teaming with the right people to fulfill their needs for using the Macintosh enterprisewide. "Apple is now talking about things they wouldn't have even known about two years ago," said Robert Keim, director of information management at Arizona State University in Tempe. "It's a really significant awakening on Apple's part."

Cupertino, Calif.-based Apple also teased attendees with plans for an ambitious three-part support plan, although two-thirds of it will not be available immediately. Curiously, at a show designed for corporate users, Apple left its big information systems-oriented support packages in the planning stages.

Instead, Apple unveiled its Assurance program, much of which was designed for Apple's everyday user (see chart). The company also announced seven-day, 24-hour support for the Workgroup Server 95. Later this year, Apple plans to offer its Solutions for Support Professionals for more demanding users in larger shops, as well as its Customer Enterprise Solution for users needing specific assistance.

The upcoming packages are expected to include on-site support personnel, configuration management utilities, televised briefings for remote sites and an on-line compact disc support database [CW, March 29].

Apple officials said only that future segments of its support offerings would begin to be available this summer, but the explanation left a strange taste in some users' mouths. "It's a bit puzzling, isn't it?" one attendee asked. "I'm not sure why Apple is going for this carrot-on-a-stick approach," he said, referring to the unavailable support programs.

Others said any service and support addition is welcome. "In the past, Apple's support has not been very good," said Alistair Jacques, director of support and development at Northwest Airlines in Minneapolis. "But the signs are very good at this point that ' y mean to change that."

During the show, Apple also unveiled AppleScript, a System 7 software extension designed to allow tight interapplication communication. AppleScript-enabled versions of popular software such as Microsoft Corp.'s Excel have been appearing for months. A $199 developer version of AppleScript will ship this month, with a retail edition targeted at in-house developers ready to go later this year.

APPLE'S ASSURANCE PROGRAM INCLUDES THE FOLLOWING:

- All Macintoshes sold on or after Feb. 1 receive free one-year service, either on site or mail-in.
- Lifetime "up and running" assistance, including general start-up assistance and troubleshooting.
- Toll-free customer support is immediately available for all products.

Source: Apple Computer, Inc.

Offer to GE could bring Newton to life

Apple is considering licensing broadcast technologies from General Electric Co.'s NBC television network to build a far-reaching interactive communications network for its impending Newton personal digital assistant (PDA), according to sources close to Apple.

The arrangement would give Apple access to the transmission capabilities of nearly 200 NBC network affiliate stations as well as the CNBC Cable audience, thus allowing Apple to set up a national data network almost instantaneously.

Apple would reportedly use the television signal's vertical blanking interval in order to transfer data, sources said. Apple has a history of working with GE, which makes some Macintosh componentry.

The 1-pound Newton is expected to be available by midyear for less than $1,000. It will use an object-based handwriting recognition system that can read printed notes and then automatically add an appointment to a calendar, dial a phone or send a fax to anyone, anywhere.

Apple is inking deals fast and furious in a bid to make Newton the world standard for the emerging PDA market. Gaston Bastiaens, vice president and general manager of Apple's Personal Interactive Electronics Division, said Apple is also talking with companies such as Time Warner, Inc. Cable News Network and Random House, Inc. to expand the types of services available to Newton.

—James Daly

Fat DASD on way

CONTINUED FROM PAGE 1

been talked up to customers for the past few months under the code name Fat DASD or Jumbo DASD, will join the 3390 Model 3 in IBM's mainframe disk storage lineup. Traditionally, when IBM has brought out a new high-end disk device, it has been as a replacement for the earlier generation.

Capacity vs. speed

The Model 9 will hold three times the capacity of today's top-of-the-line Model 3 — up to 102G bytes per unit, according to Nick Allen, an analyst at Gartner Group, Inc. in Stamford, Conn. The Model 9 will also cost about half of what the Model 3 costs — $4 to $5 per megabyte vs. about $10 for the Model 3, he added.

But there is a trade-off: Access time on the Model 9 is about triple that of the Model 3. The Model 9 is expected to be available immediately following the announcement.

And like all of IBM's optical, tape and disk storage units, the Model 9 will work under the umbrella architecture of System Managed Storage. This provides software to manage all the storage devices and move data back and forth within customer-set definitions of how long data should be kept on disk, for example, before being moved to tape.

This is not a RAID

IBM's new Model 9 magnetic storage unit will be for different purposes than the redundant arrays of inexpensive disks (RAID) units being touted by Storage Technology Corp. and others. The Model 9 is meant for information that needs to be on-line but can wait a few seconds longer to be retrieved. This could apply to historical data that has traditionally been kept on tape or is still in paper form. RAID, on the other hand, is for high-availability purposes, such as an airline or stock exchange database that can never go down.

Within IBM's storage lineup, the Model 9 will be positioned price- and performance-wise between the Model 3 and the company's family of optical devices.

While some customers welcomed the choice in high-end products, others were unsure they would ever need the Model 9. "We have no need nor interest at this point in time," said Bill Dean, director of technology management services at Pepsico, Inc. in Purchase, N.Y. "We have Model 2s under lease that are meeting our needs right now, and our total DASD is growing by maybe 3% each year. We'll wait until the prices come down, as they inevitably will."

Access time on the Model 9 is about triple that of the Model 3

Maybe later

Rino Bergonci, senior vice president of United Parcel Service, Inc. in Mahwah, N.J., said there might be some "future" need for Model 9s in his shop, which uses a lot of disk space, for its database that holds information about the company's package deliveries. But for now, he said, "IBM lost a tremendous opportunity. Six months ago, we could have used the Model 9, but we don't need it now."

Back then, he said, UPS was storing 18 months' worth of history in its database. Because it consumed so much DASD, he said, it is now storing only 12 months of information on-line; the rest is on tape.

"I chose other alternatives but might have selected [the Model 9] had it been available," Bergonci said. "We'd been talking to IBM about this for nine months, but they didn't come across."

Different philosophies

Likewise, industry watchers had different takes on the reasoning behind the product's introduction.

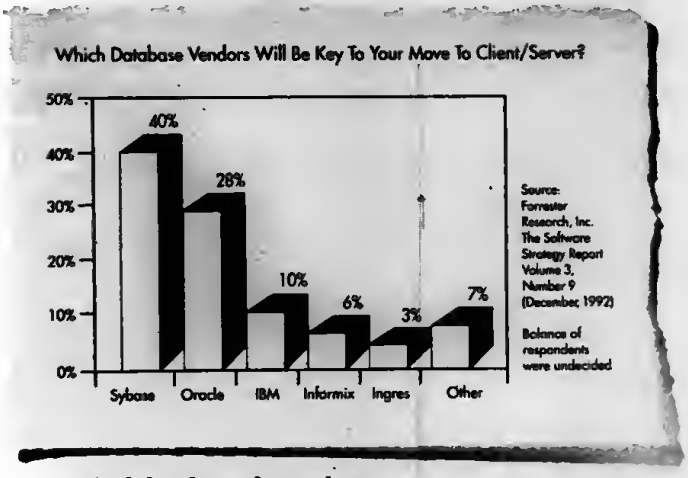
Allen said, "IBM is trying to create a discontinuity in the marketplace" and slow down the price erosion for DASD by giving customers a reason for paying more for the faster Model 3.

"Prices for vanilla DASD are dropping by 25% each year, demand is down, and there is plenty of supply," he added. "The Model 9's job is to put a floor on pricing, and IBM hopes they never sell one."

Robert Callery, an analyst at International Data Corp. in Framingham, Mass., disagreed. "I don't expect to see prices on the Model 3s holding. Competition will still drive prices down."

Callery added that he does not expect many customers to migrate data from Model 3s to Model 9s but that the Model 9's lower price may cause users to put data on-line that is currently not residing in computers at all.

The analysts have graphed the future of Client/Server computing.



And they have also spoken.

In recent issues of their ongoing reports, four of the most respected computer industry analysts have taken an unbiased look at Sybase, and its vision of enterprise-wide client/server computing.

They were impressed.

SYBASE®

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Superservers

IBM, TriCord target server extremes

By Kim S. Nash

■ The superserver market heated up last week as two major players unveiled systems targeting opposite ends of the spectrum.

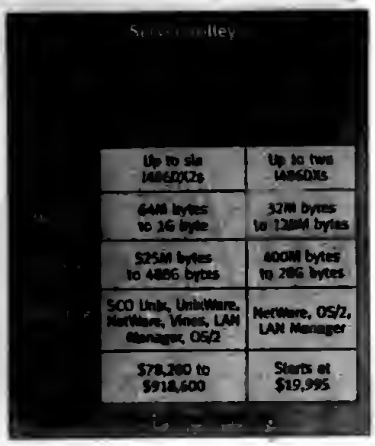
IBM rolled out the Personal System/2 Server 195, a low-end companion to its PS/2 Server 295 that observers said will go head-to-head with Compaq Computer Corp.'s SystemPro XL server. The new box, combined with a 30% price cut on dual-processor 295s, could help rouse a dormant superserver market, analysts said.

Meanwhile, early users of TriCord Systems, Inc.'s new high-end superserver, PowerFrame ES5000, said more I/O power and scalability make the box well-suited for data-intensive client/server applications supporting hundreds, even thousands, of users.

But the ES5000's large price tag, while not out of line with that of other high-end superservers, is still a hurdle for some shops (see chart).

Priced just below $20,000, IBM's Server 195 is a single-CPU system designed as a stepping-stone for IBM PC users looking to run bigger applications or consolidate existing local-area networks onto a single server. Users could then upgrade to the more powerful Server 295.

Server 195 "will definitely give Compaq a run for its money," said Brad Day, a principal analyst at Datasquest, Inc. in Framingham, Mass.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Up to two i486DXs
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32M bytes to 128M bytes
525M bytes to 4886 bytes
400M bytes to 28G bytes
SCO Unix, UnixWare, NetWare, Vines, LAN Manager, OS/2
NetWare, OS/2, LAN Manager
$78,200 to $918,600
Starts at $19,995

Pentium plans
The ES5000 is Pentium-upgradable, and versions are planned for OS/2 and Solaris 2.0, according to TriCord.

Day said that the Server 195 will prevent IBM PC users who previously had no stop-gap between high-end PCs and the Server 295 multiprocessor from defecting to Compaq and other rivals.

"They can use 195 to move beyond file serving to run a pretty significant database," he noted.

IBM, meanwhile, knocked 30% off the price of a two-CPU Server 295, which is now priced at less than $35,000.

For users looking for high-end servers, TriCord's ES5000 server extends the PowerFrame line upward, tripling the number of CPUs available on one box from two to six and expanding the amount of memory to 1G byte. The server started shipping in volume last week, but beta-test versions have been installed at 20 sites for a few months.

The ES5000 was "specifically designed for the enterprise," according to Walter Johnson, senior analyst at New Science Associates, Inc. in San Francisco. He said the machine's scalability is a key feature for downsizers who cannot get by with a system that is "just fast and cheap."

TriCord's lower end systems — PowerFrame Model 30 and Model 40 — were designed as network servers geared for users expanding PC LANs. But as a six-processor application server, the ES5000 is aimed at mainframe downsizers, Johnson said.

Houston-based Enron Corp. agreed. Enron is planning a LAN consolidation project that will roll 87 Novell, Inc. NetWare LANs, now anchored by Compaq SystemPro servers, to 10 to 12 TriCord-controlled networks.

Jim Queen, director of enterprise networking, recently completed a similar project for the firm's Enron Gas Services unit and will lead the corporate overhaul.

Queen configured seven TriCord Model 40s at the unit to serve more than 200 users each. "The SystemPros started choking after 180 users," Queen said, adding that processing slowed because SystemPros could not handle the additional I/O load of up to 70 more users.

Queen said he figured that one ES5000 server, loaded with NetWare 4.0 and set up for 1,000 users, will cost Enron about $250,000, including staff salaries.

Other users were less enthusiastic. Industrial Towel and Uniform, Inc. in New Berlin, Wis., will expand a TriCord-based network via more efficient storage methods rather than spend "a lot more money on new boxes," said Steve Knauf, chief information officer.

32-bit push

CONTINUED FROM PAGE 1

Win32s, developers will still have to do some recoding.

In a separate move also designed to help ease the migration of 16-bit applications to the 32-bit Windows NT operating system, Microsoft has incorporated a facility called Working Set Tuner into the latest beta-test release of Windows NT. This facility will improve the performance of 16-bit applications that have been recompiled to run under the 32-bit Windows NT environment.

In an interview last week, Microsoft acknowledged that it is trying to get all developers to write 32-bit applications because it is there that most operating system advances will take place. "The 32-bit API is the focus for new innovation," said Cameron Myhrvold, director of developer relations at Microsoft.

According to Noah Ross, director of technology at Cap Gemini America, Inc., a New York consulting firm that is currently building Windows applications, the trade-off with 32-bit environments is that they are easier to manage and program in because they are larger. But this encourages sloppy code writing, he said. On the other hand, code written for 16-bit environments tends to be much tighter but more difficult to maintain, especially in client/server.

Developers using Win32s said the product gives them an opportunity to begin taking advantage of 32-bit functionality without having to cut all ties to the 16-bit world. Win32s allows developers to write applications that can both run on Windows 3.1 with some 32-bit functionality and run as native 32-bit applications under Windows NT, thereby giving them access to both markets with one product.

Trade-off involved

The trade-off required by the kit subset is that applications created using it will not support the multiprocessing, multithreading or security features of Windows NT.

Still, one advantage is that it "allows us to not alienate any of our customers," said David Morehead, director of research at IMRS Co., developer of the Hyperion financial information management product in Stamford, Conn. He added that his company's applications have also seen performance improvements of more than 50% using Win32s.

"We're seeing a big performance boost," added Jim Anderson, chairman and chief executive officer at Digitalk, Inc. in Los Angeles. He said a Win32s-based version of Digitalk's Smalltalk is now in beta testing and should be available in July.

There are two other options besides the Wins32 API: Running 16-bit applications under Windows NT in emulation mode or recompiling those applications to run in 32-bit environments using Win32s. Either way, users may find that their applications run slower.

Running from slowest to fastest, in general, the order of performance magnitude is as follows: 16-bit under emulation, Win32s and Win32.

"When you move from a 16-bit Windows application to NT, it's not a straight recompile. You have to do some work," said Brad Struss, Microsoft's manager of developer relations for the Win32 developer's kit.

"The tools we provide help improve a recompiled application's use of memory paging in NT," Struss explained. "When you recompile a 16-bit application on a 32-bit engine, it's going to process all 32 bits whether you need them or not," Ross added.

Microsoft provides multiple developer's kits for Windows environments, starting with the basic 16-bit version of Windows. For Windows NT, Microsoft provides a 32-bit kit, including the Win32s API and a device developer's kit.

Microsoft also provides a version of the kit that facilitates the creation of applications that will run on both Windows NT and the upcoming DOS 7.0 offering or Windows 4.0, both of which are 32-bit multitasking environments.

IBM gets aggressive

In a bid to shatter its image as a market laggard, IBM PC Co. last week unleashed 40 new Personal System/ValuePoint systems an unprecedented six months after the product's initial launch.

The announcement should lay to rest doubts about IBM's ability to aggressively compete, analysts said.

"They're responding quicker. These products seem to show that the customer is boss," said Tim Bajarin, president of Creative Strategies Research International, Inc. in Santa Clara, Calif.

The new ValuePoints feature Video Electronics Standards Association VL-local bus graphics, with an extra slot to attach other peripherals, and an S3, Inc. graphics accelerator. The line was expanded to include footprints with room for three slots and three drive bays. A minitower was also unveiled.

The new ValuePoints feature all Intel Corp. 1486 processors, topping out at a full 33/66-MHz DX2, with Pentium upgradability. Street pricing is expected to range from $1,088 on the low end to $3,579 on the high end.

"They're definitely coming to the plate with better stuff," said Bruce I. Linker, assistant vice president of information technology at Dean Witter Reynolds, Inc. While Dean Witter buys PS/2s, Linker said the advances in the ValuePoint might lead Dean Witter to re-examine it.

IBM is also charging a slightly higher price for the ValuePoints than it did initially. Most analysts said they think the higher prices will not hurt IBM, given the spectacular backlog it has with the initial ValuePoints, which it will continue to manufacture.

The new ValuePoints are shipping now. Medialess versions will appear next month, and the minitower will not ship until June, according to IBM officials.

—Michael Fitzgerald

AMR revamps IS

CONTINUED FROM PAGE 1

tion services, according to AMR.

For starters, Sabre Technology includes a newly minted project development and risk-assessment unit whose very designation is likely to conjure up the recent collapse of the Confirm reservation system that now has AMR locking legal horns with its former partners.

"This could certainly be seen as locking the barn door after the horses have fled," noted David Cearley, an analyst at Westport, Conn.-based market research firm Meta Group, Inc., with regard to AMR's risk-assessment addition.

Kathy Misunas *will head the new Sabre Technology Group*

And while some industry observers applauded AMR for putting Hopper in charge of an expanded territory, others saw the promotion as either a kick upstairs or a less visible way of stripping duties from Hopper, who has been criticized for his role in the Confirm project.

AMR's partners in the project — Budget Rent A Car Corp., Marriott Corp. and Hilton Hotels Corp. — have filed suits against AMR. At least one suit faults Hopper for allegedly knowing about an effort to cover up Confirm's technological problems but doing nothing to solve them.

S-to-1

AMR's newly created Sabre Technology Group spreads approximately 10,000 people among three IS units — AMR Information Systems, Sabre Travel Information Network and Sabre Computer Services — and adds two new entries: Sabre Development Services and AMR Project Consulting and Risk Assessment.

Sabre Technology's launch came only weeks after Budget became the last of the three partners to file suit against AMR and AMR Information Systems. Budget is seeking a six-figure damage claim in connection with Confirm's collapse [CW, April 5].

In a prepared statement, AMR/American Airlines Chairman and President Robert Crandall said freeing Hopper to cruise the strategic stratosphere while increasing the well-regarded Misunas' day-by-day command makes maximal use of a talented team. Neither Hopper nor Misunas, both of whom report to Crandall, was available to comment at press time.

Reaction to AMR's steps was mixed.

"Basically, I see a company in its death throes desperate to cut expenses any way it can," said Victor Janulaitis, CEO of management consulting firm Positive Support Review, Inc. in Santa Monica, Calif. AMR, he noted, has had anything but a smooth run in recent months.

"To begin with, they were hit hard by the recession and still haven't pulled out of it," Janulaitis said.

Only days before the Sabre Technology launch, American Airlines announced plans to furlough 900 pilots and engineers, shattering a 10-year no-layoff record.

"They can talk about corporate synergy and transition all they want," Janulaitis said. "But at the end of the day they're going to do exactly what their customers tell them to do — and the customer is saying 'Cut our bill.' " He predicted an early and significant round of work-force cuts at the new unit.

Overall, Cearley said, "The consolidation makes a lot of sense. When [the IS function] was split up, there was too much finger-pointing. Now, there's no 'them' — just one big 'us.' " Time once spent allocating blame, he said, can be recaptured for productive use.

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News Shorts

CA settles user licensing suit

First Interstate Bancorp and Computer Associates International, Inc. last week reached an out-of-court settlement stemming from the bank's lawsuit against CA regarding the transferability of software between locations [CW, Dec. 7, 1992]. Filed last year, the lawsuit charged that CA had imposed upgrade, maintenance and new license fees against fixed-price licenses. First Interstate last year consolidated data processing operations into two data centers. Neither party discussed the terms of the settlement, though a source close to the bank said First Interstate "was able to receive the flexibility we wanted in terms of CA licensing."

CSC wins $400 million U.S. contract

Computer Sciences Corp. (CSC) last week won a 10-year, $400 million contract from the U.S. Department of the Interior's Bureau of Land Management to provide a new Automated Land and Mineral Record System. CSC will modernize and automate administrative, land and mineral records and re-engineer and rehost administrative systems for the bureau, which manages more than 272 million acres of public land.

Sun forms SPARC technology group

Determined to help its Scalable Processor Architecture (SPARC) technology go forth and multiply, **Sun Microsystems, Inc.** last week launched a new business group. The SPARC Technology Business unit will sell SPARC processor and system product designs, engineering services and hardware stripped of Sun's Solaris Unix operating system. Sun will levy up-front charges plus royalties per unit sold on selected designs and technologies. One example is the system design for the SPARCstation 10 workstation, which would cost $500,000 up front and $200 per unit sold.

DEC appoints systems integration exec

Digital Equipment Corp. last week announced the appointment of Gresham Brebach Jr. to the post of vice president of systems integration and professional services for DEC's five customer business units. Brebach's experience in information technology services includes positions as director at the New York office of McKinsey & Co.; founding and acting chief executive officer of the Information Consulting Group; and managing partner at Arthur Andersen & Co.

SHORT TAKES The **SQL Access Group** will announce three new standards for interoperability and portability this week. Documents will be available for the new specifications covering call-level interfaces, SQL and remote database access.... **Gupta Corp.** shipped SQLWindows 4.0 and Quest 2.0, major new versions of its development tools announced in January.... **Apple Computer, Inc.** cut prices on selected PowerBook models by up to 18%.... **Hewlett-Packard Co.** cut prices on its HP 700/RX family of Xstation terminals by up to $1,000.... **IBM** announced the 1993 edition of the OS/2 Development Tools Guide, a free publication that lists products from independent software developers that can be used for OS/2 programming.... **Software Publishing Corp.** extended for six months the $499 competitive upgrade promotion on its Superbase database management system. ... **Unisys Corp.** announced a national agreement with **KPMG Peat Marwick/The Alliance Group** and **Systems Consultants, Inc.** to jointly market information systems to state and local governments.... At the APPN Implementors Workshop next week, host IBM is expected to provide the first formal forum for other vendors to comment on and suggest updates to its Advanced Peer-to-Peer Networking protocol.

SynOptics backs NetView

Pact integrates Optivity and LattisWare into IBM product

By Elisabeth Horwitt

Providing yet another sign that IBM's NetView/6000 is a rising star in the Simple Network Management Protocol (SNMP)-based network management firmament, SynOptics Communications, Inc. last week announced plans to integrate its Optivity and LattisWare Solutions hub management applications into the IBM product.

"Our assessment is that NetView/6000 is one of the major competing [management] platforms, and the alliance with SynOptics is a powerful one," said Michael Howard, president of San Jose, Calif., research firm Infonetics Research, Inc.

A key differentiator between NetView/6000 and its competitors, such as SunNet Manager from Sun Microsystems, Inc.'s SunConnect division and Hewlett-Packard Co.'s OpenView, is Systems Monitor, which began shipping last month, Howard said. It lets the user set up monitors at distributed local-area network sites that either report back key events to a central NetView/6000 system or automatically respond to local problems.

By the third quarter of this year, users will be able to configure SynOptics' Optivity systems as NetView/6000 System Monitors that can pass information to NetView/6000 about hubs and attached routers, bridges and LAN devices, said Sanjiv Ahuja, an IBM product manager.

NetView/6000 will also be able to manage SynOptics cascadable workgroup hubs, as well as Fiber Distributed Data Interface networks, and forward SNMP data from the hubs to IBM's host-based NetView by the third quarter.

Currently, NetView/6000 can monitor SynOptics Ethernet hubs by running LattisViews software.

The two vendors plan to have SynOptics' RouterMan and PathMan run under NetView/6000 by the fourth quarter. RouterMan displays status and configurations of routers attached to SynOptics hubs; PathMan monitors the general health of all bridges, routers and intelligent hubs along a physical or logical path.

By first-quarter 1994, NetView/6000 and Optivity autodiscovery features will work together, enabling NetView/6000 to correlate alerts that come from a particular networking environment, such as Transmission Control Protocol/Internet Protocol, across physical devices monitored by Optivity, Ahuja said.

SynOptics hub management software currently runs on NetView/6000, SunNet Manager and OpenView. SynOptics recently announced plans to integrate the system with Novell, Inc.'s NetWare Management System.

Pricing for Optivity on NetView/6000 is expected to be less than $10,000 per user license.

Routing tiff

CONTINUED FROM PAGE 1

ent devices interoperate across the backbone, Boyle said.

While the talks have just begun, IBM, Wellfleet Communications, Inc. and 3Com Corp. have expressed an inclination to join the group.

The vendors would meet on the neutral turf of the Internet Engineering Task Force (IETF), the TCP/IP standards body [CW, April 5]. They would jointly develop solutions to problems that now haunt attempts to interconnect SNA devices over TCP/IP backbones, said Wayne Clark, Cisco's SNA product manager.

"The industry needs a standard way of incorporating not only SNA but also other connection-oriented protocols, such as source route bridging, into the LAN backbone," Boyle said.

One user who applauded Cisco's initiative was MultiFoods. The Minneapolis food company uses Wellfleet routers that encapsulate SNA protocols to run on TCP/IP, according to James Tretter, a telecommunications manager.

"The big advantage [of a standardized way to run SNA over TCP/IP] is that we would be able to use less intelligent communications servers or routers at the smaller sites," Tretter said.

Wellfleet routers are just too intelligent and expensive for the simple task of encapsulating SNA traffic at each site, he added.

Along those lines, standardized SNA over TCP would enable intelligent hubs to act as end-node routers that feed SNA or NetBIOS traffic directly onto the backbone without the need for a separate router box, Boyle said. This would save users even more money.

"A classic example [of a user population in need of such a standard] is the Internet, where everyone can put up a different router" to communicate over the national TCP/IP backbone, Tretter said.

Right decision

Boyle and several vendors applauded Cisco's choice of DLS. The protocol already runs on IBM 6611 routers and will be supported by Wellfleet's next version of routing software, due out in the third quarter, a Wellfleet spokesman said. In addition, DLS is already an "open" protocol, at least on paper, because IBM recently submitted DLS specifications to the IETF as a request for comment.

The group would also potentially provide some key enhancements to DLS, which even IBM said is not a finished protocol. "Yes, DLS needs enhancements; we asked as part of the [request for comment] for folks to submit comments," said Tom Danninger, IBM's manager of DLS. Improvements suggested by potential members of the group included the following:

- The ability to route IBM Synchronous Data Link Control (SDLC) traffic from an IBM cluster controller, across unlimited hops, to an IBM host.
- The ability to extend support to Ethernet.
- The ability to route transmissions by class of service.
- Enhancement of flow-control mechanism.
- The ability to handle IBM PU2.1 devices over an SDLC link.

Cisco's anointing of DLS was also perceived as a peace gesture, following a year of all-out attack against IBM's Advanced Peer-to-Peer Networking (APPN) protocol.

Indeed, the IETF working group was formed to iron out the differences between APPN and Cisco's proposed alternative, Advanced Peer-to-Peer Internetworking (APPI), Clark said. However, the IETF refused to get in the middle of the dispute, vendor spokesmen said.

Tretter said he regretted that IBM and Cisco are still not working out their APPI/APPN differences. MultiFoods is using APPN to link its IBM Application System/400s. However, he said he is "encouraged because there is so much discussion in the industry about supporting APPN over a routing network," he added. "Someone has to step up and take charge."

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AppleTalk	**LocalTalk*
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HEWLETT PACKARD

Tax man gets with the program

IRS predicts big return on $8 billion Tax Systems Modernization plan

By Gary H. Anthes
WASHINGTON, D.C.

Having struggled for a quarter-century with mixed results to overhaul its antiquated tax system, the Internal Revenue Service is now taking a number of steps to fundamentally improve its systems development acumen.

In addition, the agency has belatedly acknowledged that business needs should drive technology, not the other way around. The agency is rewriting its Tax Systems Modernization (TSM) "Design Master Plan" as a user-driven "Business Master Plan," to be released next January. The plan will be the foundation on which the IRS will build the $8 billion TSM program.

"It will be owned by the key business [units] rather than by the technologists," said Bruce Pitt, deputy assistant commissioner for information systems management.

Last fall, the House of Representatives Government Operations Committee wrote in a report on TSM, "in 1992, IRS closed the gap considerably between its business and technical planning." However, the committee went on to warn of risks stemming from "the massive size of IRS and the TSM effort, the agency's culture of functional specialization and TSM stakeholders' diverse interests."

Answering the call

In response to these and other concerns, the IRS has in the past few months moved forward on the following:

- Established a federally funded research and development center — funded at $78.5 million over five years and run by the private sector — to provide high-level technical assistance and strategic planning for TSM.
- Established a high-level "architect office" to ensure the soundness of the blueprint for TSM in areas such as software, telecommunications and security. The first two of three computer scientists to be hired for the office will be announced soon.
- Embarked on a program developed by Carnegie Mellon University for assessing and boosting the sophistication of an organization's software development processes (see story below).

"TSM shows signs of moving from what appeared to be a group of weakly related developments toward a large, coordinated systems development program," said the National Research Council in a report last year.

Still, while the IRS' efforts to improve its software development practices are laudable, they remain insufficient, according to Howard G. Rhile, director of general government information systems at the U.S. General Accounting Office.

"There are some more fundamental things that need to be done to make TSM a success," he said. "These involve figuring out how they are going to do business and then how technology fits in. The technical plans are pretty far along, but the business operations concepts have not been finalized."

In congressional testimony last year, for example, Rhile called the IRS' approach to input processing "a high-tech, high-risk and high-cost venture" because the IRS had not done thorough cost/benefit analyses of the alternatives.

As a result, Rhile said, the features of one $130 million system would largely be duplicated by another $2.2 billion system; a key analysis assumed 100% error-free optical character recognition; and the IRS failed to consider a number of key factors bearing on the expected number of electronic filings (see story at right).

Hands full

The IRS has much organizational analysis and planning work to do, Rhile said.

"Taxpayers talk to one person if they have a customer service problem, to another if they have a collection problem and to yet another if they have an examination problem. Is the IRS still going to have these stovepipe functional areas? That will profoundly affect the way the system is designed," he said.

According to Rhile, the IRS is finally beginning to approach TSM from a business process point of view. "The initial round of planning for TSM was done by the technical people in good faith and with a lot of hard work. Now the business side of the house is beginning to catch up, and it's beginning to bear fruit. The problem is that it's late," he said.

Michael Vasquez

Pay now, gain later

Through 2008, TSM will cost $7.8 billion above the $15.5 billion needed to keep existing systems running. Through fiscal 1992, the IRS had spent $800 million on TSM. The IRS estimates TSM will generate $12.6 billion in benefits by 2008 from reduced costs, increased collections and interest savings. Taxpayers will pocket $5.4 billion in cost savings and spend 1 billion fewer hours dealing with the IRS.

The 10-year TSM program involves 60 major projects, two dozen acquisitions and 20 million lines of new software.

The paper chase

Despite the growing popularity of electronic filing, paper returns will continue to represent most of the IRS' annual business for the foreseeable future.

In fact, the paper volume handled by the IRS' 13 tax processing centers is expected to grow from 200 million forms in 1992 to 223 million by 1995.

For this reason, electronic document imaging is a key part of the agency's massive $8 billion modernization effort.

In February, the IRS awarded its Service Center Recognition/Image Processing System (SCRIPS) contract, valued at $67.7 million, to Grumman Corp.'s Grumman Data Systems Division. Grumman plans to deploy both a development system and a pilot system in October, just in time for the 1994 tax-processing season.

The IRS said it plans to acquire as many as 13 SCRIPS during the next four years; the contract is scheduled to run for eight years.

SCRIPS will replace several incompatible recognition systems that the IRS deployed during the past decade. The new systems will also feature much improved optical character recognition (OCR) technology and will facilitate the capture of full images from tax forms. This will enable agents to retrieve questionable returns electronically.

Currently, the IRS electronically scans in just the data contained in its forms rather than the full image of the forms. The new imaging system will thus enable IRS clerks to settle questionable OCR results by accessing a claim's image instead of having to retrieve the original paper, as they do today.

Grumman is using hardware and software from NCR Corp. in Dayton, Ohio, Informix Software, Inc. in San Jose, Calif., and Recognition Equipment, Inc. in Dallas. It uses high-speed scanners from Scan-optics, Inc. in East Hartford, Conn. — *Ellis Booker*

Measuring software maturity levels

The IRS has just completed the first phase of a process to evaluate the maturity of its software development and maintenance practices.

Assisted by the Software Productivity Consortium in Herndon, Va., which licenses the approach from the Software Engineering Institute, the IRS used the Capability Maturity Model for Software to find its position on a five-rung ladder that ranges from immature, unrepeatable software development processes to mature, disciplined practices.

Having completed that step, the IRS is now preparing a set of follow-up recommendations. It will also establish permanent Software Engineering Process Groups (SEPG) to continually pursue software process improvement.

"You basically institutionalize the process of process improvement," said Fred Cole, an information systems management analyst at the IRS. "The SEPGs guide the implementation of the process improvement recommendations, but by definition, implementation is done by everyone."

The IRS refused to say at what level it found itself on the software process maturity scale but most organizations going through the evaluation for the first time end up at the bottom.

"I see them still not settled on a methodology for developing software," said Howard G. Rhile, director of general government information systems at the GAO. "Some software is being developed under the [classic 'waterfall'] concepts, some of it according to information engineering, some of it according to the [Software Engineering Institute] model. They have to settle down and figure out which way they they are going to do it."

— *Gary H. Anthes*

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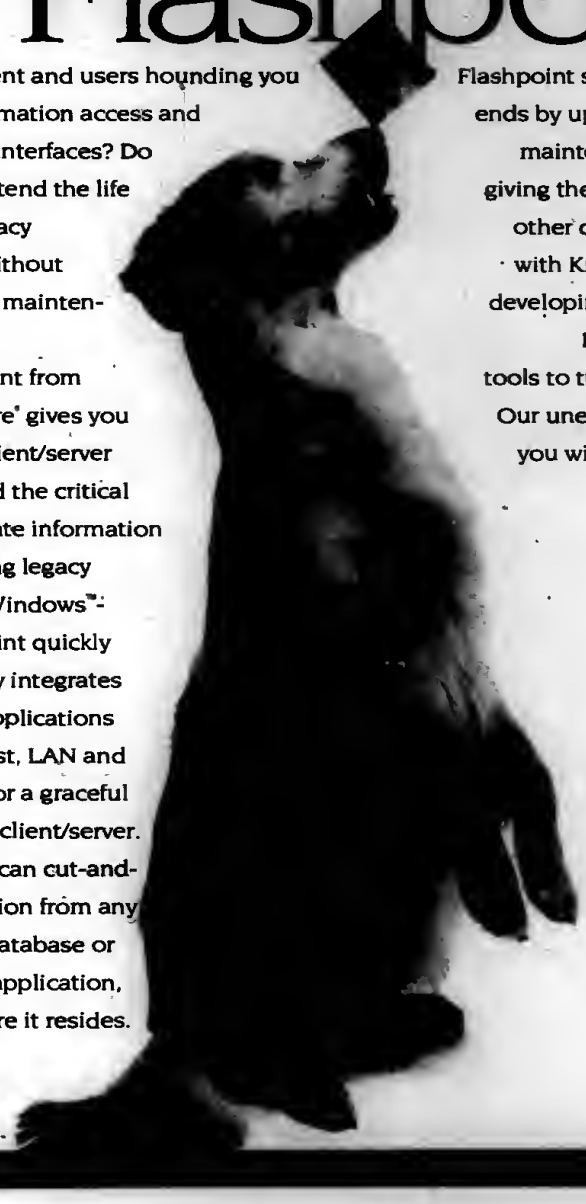

Flashpoint slashes development time of GUI front ends by up to 90 percent and drastically reduces maintenance - revitalizing legacy systems by giving them the same graphic "look-and-feel" of other corporate applications. Plus it partners with KnowledgeWare's ObjectView™, ideal for developing client/server database applications.

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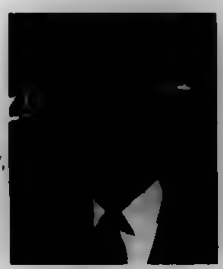

Jim Hill, manager of order processing systems for Deere & Company, used Flashpoint to combine four legacy applications into an integrated system for dealers. Flashpoint's intuitive development environment shielded developers from the complexities of interface programming and PC-to-mainframe communications.

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Portable computing

Canon offers 486 notebook/printer combo in the U.S.

By Michael Fitzgerald
COSTA MESA, CALIF.

Barely a year after its U.S. debut, Canon Computer Systems, Inc. today will bring an innovative combination notebook and printer to the U.S. market.

The Canon NoteJet 486 takes Canon's bubble jet printer technology and integrates it with a 12.2- by 10-in. ootebook computer based oo Texas Instruments, Inc.'s 25-MHz 486SLC processor. The total package weighs 7.7 pounds, and the base model costs $2,499. Canoo claims a three- to four-hour battery life.

Users and analysts found much to like about the product, though analysts cautioned that the NoteJet will likely find itself in a niche category.

"We do a lof of work in Mexico, and they don't have the same kind of software we do, so it's a real advantage to us to have a built-in printer," said Lori Wolf, presideot of Vocational Trends, a rehabilitation counseling firm in Los Angeles. She said her firm will buy five or six units as sooo as they ship. Canon said NoteJet is shipping now in limited quantities and will ship in volume oext month.

"It's an interesting concept, and we are looking for a portable printer for our ootebook pilot," said Bill Bozym, information systems planning and technology assessment specialist at Pacific Bell Directory in San Francisco. However, Bozym said, the pilot oses Apple Computer, Inc.'s PowerBook.

Canon claims *that the NoteJet 486 will have a three- to four-hour battery life*

"This will have real market appeal for those who require printing, but most mobile users today can get by with using fax machines in hotels and offices," said Gerry Purdy, an analyst at Dataquest, Inc. in San Jose, Calif. Purdy said he believes the real market opportunity for Canoo will come if it can build a notebook that allows users to scan in documents and fax them.

International Data Corp said 400,000 portable printers were sold in the U.S. last year

"For the valoe it offers, the price is OK, and while [Canon's] PC presence is weak, this should get them on the map," said Tim Bajarin, president of Creative Strategies Research International, Inc., a consultancy in Santa Clara, Calif.

Do aot look for IBM, which co-developed with Canon the Japanese versioo of the NoteJet — released in January — to eoter the U.S. market with sueh a product anytime soon. An IBM PC Co. spokesman said IBM thinks the product has a "limited opportunity" in the U.S.

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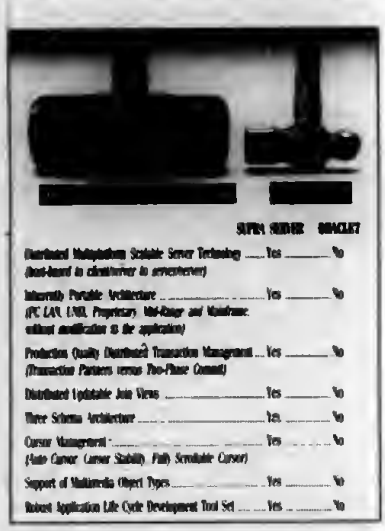

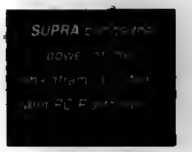

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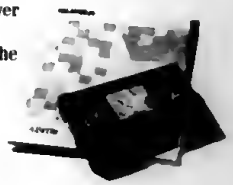

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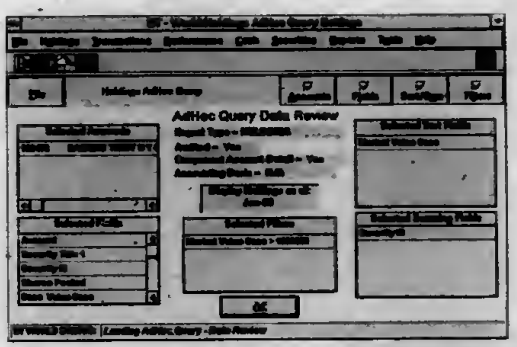
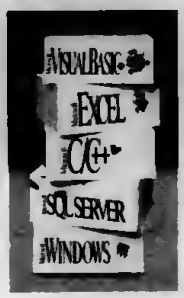


Above: BT-World makes it easy for Bankers Trust's clients to get important information on their portfolios. Right: These are the tools and applications used to create BT-World, an online solution that's giving Bankers Trust a worldwide competitive advantage.



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Testing the speed limit

$15.8 million gigabit trial networks ready to strut their stuff

By Ellis Booker

While questions about the future National Research and Education Network (NREN) are still as much political as technical, the five gigabit networking testbeds developed in advance of NREN to test the feasibility of gigabit/sec. networking are indisputably here.

What is more, information from these operational research and development networks are now being presented publicly.

A bit of background first. All five gigabit testbeds are sponsored by the National Science Foundation and the Defense Advanced Research Projects Agency under a 1990, $15.8 million contract to university supercomputer centers. Participating long-distance carriers, regional phone and switching manufacturers are providing equipment and network services at their own expense — far in excess of the government funding.

The project was started by the Corporation for National Research Initiatives (CNRI) in Reston, Va. CNRI is a not-for-profit group that promotes national communication infrastructures.

The research itself has been divided into two areas: technologies for gigabit communications networks (including switching, transmission, protocols) and applications enabled by such networks, including distributed supercomputing. At the conclusions of the tests, the best and most efficient architectures will be documented.

Sonet, speeds shared

While each of the projects focuses on a different area, they share the following basic similarities: All use backbone networks running at the Synchronous Optical Network (Sonet) transmission facilities at 2.488G bit/sec., with separate 622M bit/sec. channels.

According to Richard Binder, a principal scientist at CNRI, it is too early to make broad conclusions about the testbeds, some of which are not fully configured. "Generally, one can say that at present, a difficulty is getting the host computers to handle the I/O above 600M bit/sec.," he said. Work on computer operating systems to support this requirement is needed, he added.

The testbeds will continue through mid-1994, but it is unclear whether they will continue beyond that or whether they will be interlinked, Binder said. Next month, each of the principals in the trials will deliver a third annual report.

CASA

Connects: Cal Tech and NASA's Jet Propulsion Laboratories (JPL), both in Pasadena, Calif., with the San Diego Supercomputer Center and the Los Alamos National Laboratory. CASA is currently operational between Cal Tech and JPL. In June, the link to San Diego is expected to come on-line, to be followed later in the year by the link to Los Alamos.

Highlight: Using High Performance Parallel Interface (Hippi) directly over Sonet, with a major focus on distributed computation efforts to compute in parallel for Grand Challenge applications.

BLANCA

Connects: Two segments by a transcontinental T3 line. The first 622M bit/sec. segment links the University of Wisconsin at Madison to the University of Illinois at Champaign-Urbana. Due to be operational in June, it will use the Xunet ATM switch from AT&T Bell Labs. The second link is between the University of California at Berkeley and Lawrence Berkeley Laboratories.

Highlight: Collaboration between researchers and application scientists on methods of controlling the network. Research is focused on real-time protocols for remote imaging, visualization and simulation.

AURORA

Connects: Bellcore, MIT, the University of Pennsylvania and IBM's T. J. Watson Research Center.

Highlight: Two networks, one for fixed-cell-size ATM over Sonet using BellCore prototype switching equipment, another for variable-length packet-switching, called Packet Transfer Mode, using the IBM experimental Planet switch. Bellcore has developed its packet protocol to support multimedia over these high-speed facilities. Called Multimedia End-to-end Communications Architecture, the scheme supports a variety of data within a single, digital network.

You look 'mahvelous'

Wearable PCs are the next accessory for users

By Michael Fitzgerald

Noted fashion critic Mr. Blackwell would probably be horrified, but NEC Corp. continues its efforts to create wearable PCs.

The company announced its effort late in 1991, saying the PC will become such an essential part of daily life that we will add it to our wardrobe.

At the time, researchers at the Advanced PC Design Center in Tokyo predicted that by the late 1990s, people would be wearing their PCs.

NEC said potential PC fashion plates might include paramedics, who would wear computers across their shoulders and use specialized trackballs to scan for injuries and check vital signs. They would dictate their findings into microphones and could also access CD-ROM-based medical encyclopedias.

For those who need a keyboard at all times, a notebook PC with shoulder straps is under development. Folding keyboards and display setups would allow this to become a reality.

A NEC spokeswoman said the company has not accelerated its timetable for these devices.

While NEC had promised to deliver a phone that attaches to the wrist sometime this year, the spokeswoman said that is unlikely.

NEC says wearable PCs, *including those slung from the shoulder, will be in vogue by the end of the decade for users in various professions*

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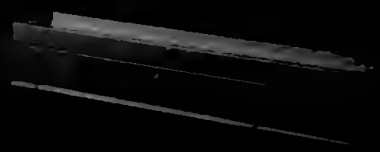

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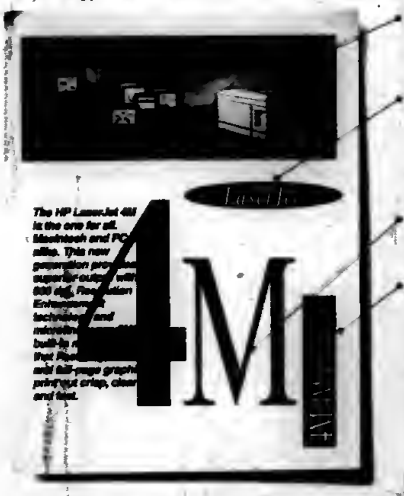

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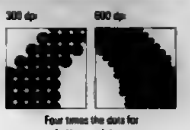

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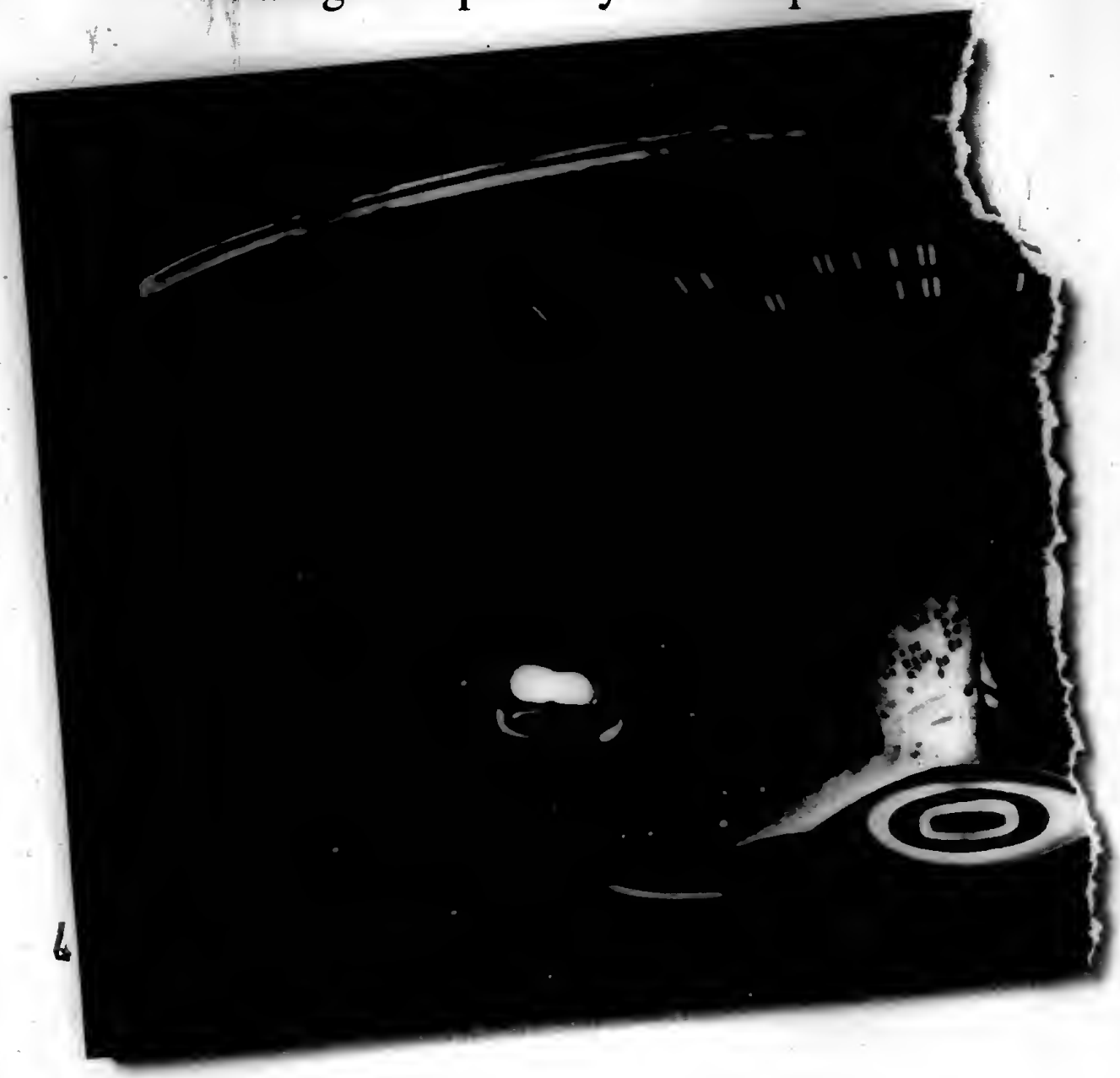

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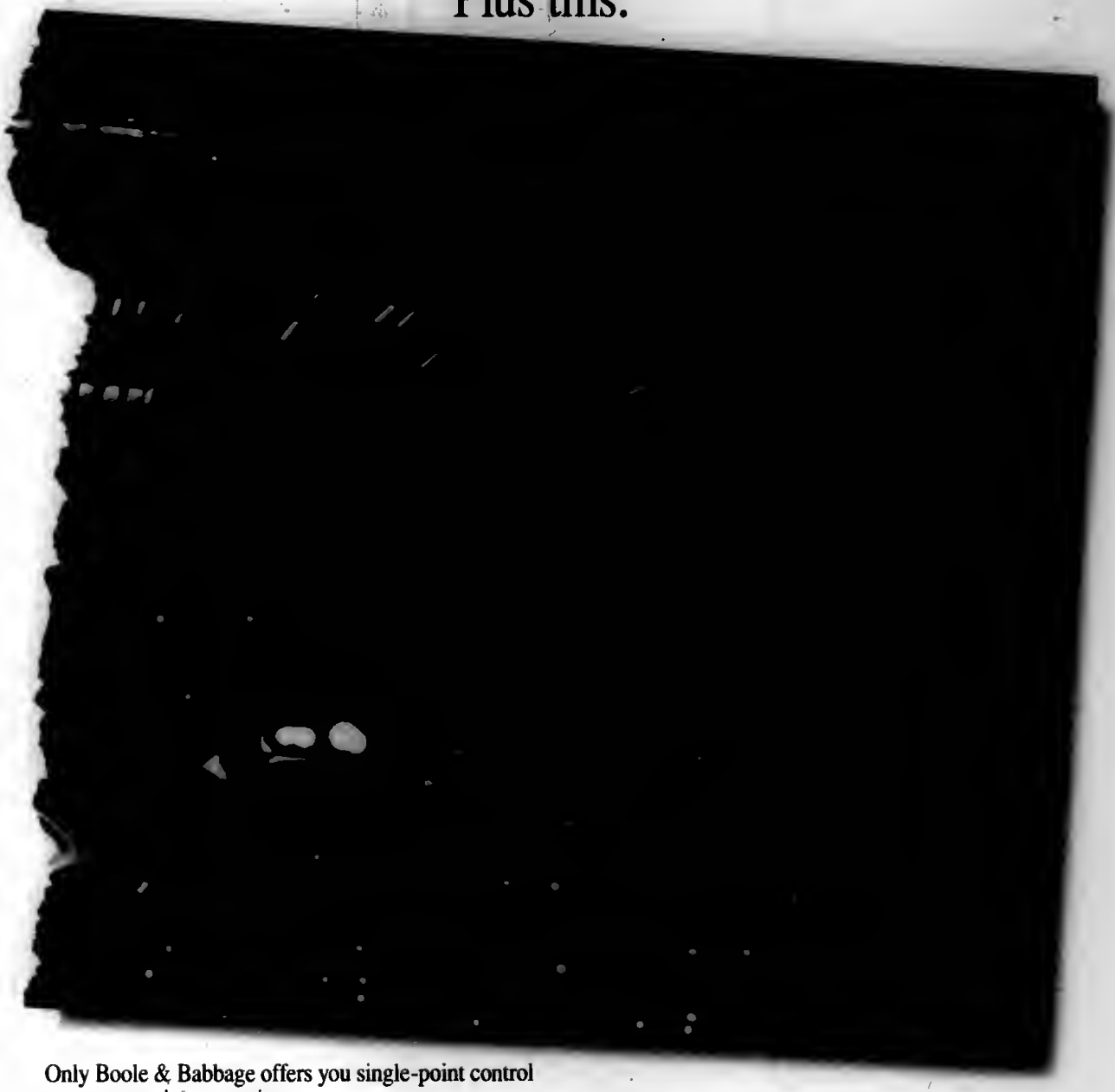

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Flame out

If I called IBM Chairman Louis Gerstner a philanderer and an embezzler in this column, he could sue me for libel and would probably win.

After all, I have no justification for that statement. But if I said the same thing on CompuServe, it's by no means clear whether Gerstner would have any recourse against me.

Such are the confounding issues of free speech in this brave new world of electronic publishing. As readers, we take for granted the fact that the information in responsible publications has been double-checked by responsible editors. Unfortunately, there's no such luxury where electronic bulletin boards or public E-mail systems are concerned. As use of these electronic forums explodes during the next several years, we could be looking at a legal nightmare.

The topic came up a few weeks ago when Medphone Corp., a medical technology firm in Paramus, N.J., sued an investor over statements the investor made on Prodigy. Medphone claims the allegedly false statements caused its stock to drop. The investor's lawyer says his client was merely expressing an opinion. The case is puzzling because there is virtually no legal precedent for such a suit.

I sympathize with both sides. As a CompuServe regular, I have read hundreds of messages over the years that could be considered defamatory. In bulletin board parlance they call it "flaming," a form of blowing off steam that's sort of like mouthing off in a bar. Bulletin board users tend to be a pretty opinionated bunch, so there's a lot of flaming that goes on out there. It's generally harmless.

As a user, it pains me to think that every piece of flame mail or offhand E-mail shot could be subject to the same legal scrutiny as something written in a newspaper column. But as a journalist, I don't think it can be any other way. The number of public bulletin boards has jumped more than tenfold in the last five years and now numbers more than 44,000. Prodigy claims to have 1.75 million users and more than 80,000 messages daily. Thus, the potential audience for a defamatory statement on Prodigy is the same as for the same statement in the Sunday *New York Times*.

The problem is that Prodigy and other bulletin board services can allow the illusion of intimacy to mask the reality of a public forum. It's a fact that people write things in an E-mail that they won't say face-to-face. And when flame mail is flying, the writers tend to forget that what they're saying can be read by thousands of others.

But ignorance isn't an excuse. We are rapidly moving toward a world in which the power of the press no longer belongs only to those who own the press. Information technology is making publishers of us all, and the burden is on those of us who choose to publish to make sure we are responsible for what we say.

Paul Gillin, *Executive editor*

No train, no gain

Several recent *Computerworld* articles about migrating organizations to graphical user interface (GUI) shops have included the cost of training as a prohibitive step in the process.

It is clear that in order to have a successful implementation of a graphical environment, the IS staff must be trained to install and maintain the systems. But this training should be a function of their very existence. It should not be considered an extraordinary expense.

It seems inappropriate to include in the per-unit cost of a GUI installation the cost of training end users unless that cost is also reflected in the cost of operating a graphical-based system.

Most companies with which I am familiar do not spend the necessary time or money to get the most out of existing character-based applications.

David M. Hollis
Washington, D.C.

Staying alive

Like so many stories before it, "Hotel eans mainframes" [CW, Feb. 22] seemed to be proclaiming, "Here's another small system replacing a large one! The mainframe is dead." In reality, the Pyramid system, by today's standards, was being compared with an even smaller and less expensive system than itself.

Although some applications are rightfully being moved to the desktop, many cannot be performed without the security, reliability, availability and massive I/O and data handling capabilities afforded only by large systems.

To imply otherwise, directly or by omission, sets false expectations and is a disservice to chief information officers who must explain the realities of this downsizing rhetoric to their senior management.

There's no question that our industry is changing. However, what we're seeing is a shift toward an enterprisewide view of computing where desktop technologies, with their low-cost processing, and large systems, with their data and resource management capabilities, work in tandem to deliver the solution most appropriate for a customer's individual needs.

Joseph Francescont
Executive vice president
Amdahl Corp.
Sunnyvale, Calif.

Political games

The article on the Clinton program for "high" technology, "Clinton plan stirs optimism" [CW, March 1], is discouraging in its empty-headed cheerleading for tax-supported industry. With any government program, the politically connected are rewarded, and the politically disconnected are punished.

This is neither some new revelation nor blind cynicism; it's hard-won wisdom from a couple thousand years of recorded history. The eager, creative energies of the young, politically naive entrepreneurs in Silicon Valley and elsewhere will now be harnessed to the bureaucrats, favor-seeking "businessmen" and vote-buying politicians of the establishment. Businesspeople ought to defend innovators in the throes of birthing new enterprises and should not suck up to their destroyers.

Cliff Styles
Culver City, Calif.

No longer objective

During the past year, I have seen *Computerworld* transform from the premier source of objective information systems news into the most anti-IBM, pro-Microsoft-biased publication around.

What is most disturbing is that this bias does not emanate from the staff editor level, but rather from the editor in chief and executive editor level and presumably with International Data Group's knowledge and blessing. The pinnacle of this bias was Paul Gillin's recent "humor" article "Your turn, Windows" [CW, March 22].

Why don't you change the name of the newspaper from *Computerworld* to *Microsoftworld*? That way, at least the subscribers would know what they were buying.

James Schneider
Worldwide Chain Store Systems, Inc.
Chicago

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Where CIOs went wrong

Paul A. Strassmann

The time has come for CIOs to get back to basics and clean up their noninteroperable, redundant, obsolete, overpriced, error-prone, schedule-lagging and credibility-lacking systems.

Busy pursuing power and position, the majority of CIOs have neglected the basics of information management — modernization and cost reduction — and are failing in their jobs.

How do you know when a CIO is a failure? There are usually plenty of clues. If the chairman, president or agency head is replacing the current systems head, that's a pretty good indicator.

Multiple reorganizations are also a tip-off. And you know there's trouble if information technology budgets are growing faster than income, if an organization is still pondering presentations about applications that competitors are using or if salespeople, production planners, engineers and designers are functioning as part-time systems managers instead of taking care of customers.

At many organizations, chaos reigns in the form of improvised databases and proliferating unconnected LANs. Bootleg applications, conceived by enthusiastic amateurs, have sprung up everywhere.

What happened? How did things get so bad? When I talk to involuntarily retired CIOs, they mostly fix their misfortunes on the microcomputer. They say it came too fast. They also blame IBM and DEC for not delivering an "architecture" that could put the genie of personal computing back into a confinable scheme. Well, that's like blaming the rain for water in the living room when you haven't bothered to replace missing tiles on the roof.

Wesley Bates

The vision thing

The prevailing mess and general malaise about the effectiveness of our information management are directly traceable to the writings of a few persuasive thinkers who date back to the late 1970s and early '80s. Most of these were academics who subsequently became consultants without ever managing any sizable computer operation.

The model set before an ambitious CIO was simple: Forget grubby details such as integration of LANs and WANs. Delegate data administration to "techies." Let the vendors take care of migration to client/server. And don't worry about software assets because "open systems" will take care of that.

The CIO was advised to become an "information visionary;" to stake a claim to establishing the strategic directions of the business; to engage in "re-engineering" of the entire company; and to use his position to place himself in the race for corporate presidency.

There is nothing wrong with a CIO becoming a COO or CEO, except that it almost never happens. CIOs who have succumbed to the simplistic view that they should be strategists, instead of tending to their shop, have decreased their job tenure to a half-life of less than 2½ years. The only ones who have gained are the consultants. It is time for CIOs to stop aiming at other jobs and start paying attention to their own.

If they do that, they may survive as operating managers who earn real revenue instead of living off administrative overhead.

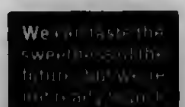
Strassmann has served as a corporate information executive since 1982 for General Foods, Kraft, Xerox Corp. and the U.S. Department of Defense. This column was adapted from his forthcoming book, *The Politics of Information Management*.

Computing by candlelight

MIS PERCEPTIONS *by* Max D. Hopper

Climbing the ever steeper technology curve, it is easy to look down and congratulate ourselves on the heights of mastery we've attained. But then we look up and see a volcanic eruption of new capabilities creating a daunting peak that puts our progress in perspective.

Innovation is outstripping assimilation. We are falling further and further behind in exploiting technology's potential for ease of use and enhanced interactivity.



I am as enchanted as anyone by the promise of the PC revolution but far less certain of our methods for making the most of it. Maybe they're too evolutionary.

There is an ironic observation that if it were not for Edison, we would all be watching TV by candlelight. Lately, I've wondered whether we're using our computers by conceptual candlelight, deprived of a larger, more illuminating vision of the technology's potential.

Meet users halfway

Now that computing is democratized throughout the workplace, there's a new imperative for our machines to meet the sensibilities of the user halfway. They need to offer the kind of ease of use, visualization, experiential learning environment and multisensory, interactive communications that fits the way we think, learn and work best.

The mouse, pen computing and graphical user interfaces are clear steps in the right direction. Most of the time, though, our machines sit around "waiting at the speed of light" for us to communicate with them through a plodding input device called the keyboard. What's wrong with this picture?

I look at the intuitive, no-hassle operating convenience that users expect — and get — from all manner of home entertainment electronics, and I wonder if their makers know something our vendors don't.

Why should we have to play so patiently with our onerous workstations? As a user, I'm tired already. Give me a Nintendo "Business Boy," or maybe a Sony "Workman" with full audio and video I/O capabilities.

In my IS role, however, I realize our economic justification processes are just as much to blame as any lack of imagination or responsiveness from our vendors. IS people, and our corporate money managers, are full partners in perpetuating our own plight.

We salivate over potent new products, yet we procrastinate in purchasing them. Speech recognition systems exist, but we balk at their limitations. Multimedia is tempting, yet tough to rationalize. Full video interactive communications systems beat E-mail cold, but we can't warm up to the price. And virtual reality is pure fiscal fantasy.

We can taste the sweetness of the future, but we're not ready to pick up the dinner tab.

Maybe we're destined to dine on the morsels of modest improvement until we can divest ourselves of Gutenberg's legacy. The printing press inaugurated a mode of communicating that has served us well for centuries. We abandoned show-and-tell for read-and-write, adopting a character-based environment so intrinsic to our culture that we cannot envision how it constrains us.

Yet, perhaps now we have a new machine that will eventually illuminate our boundaries and light the way to more liberating horizons.

We'll see.

Hopper is chairman of Sabre Technology Group

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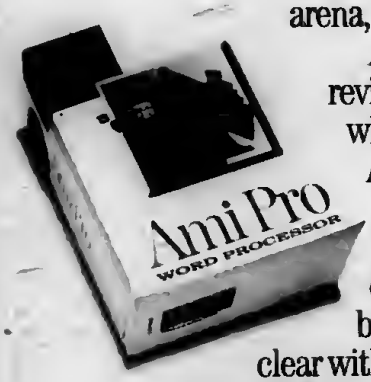

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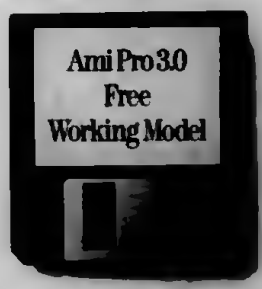

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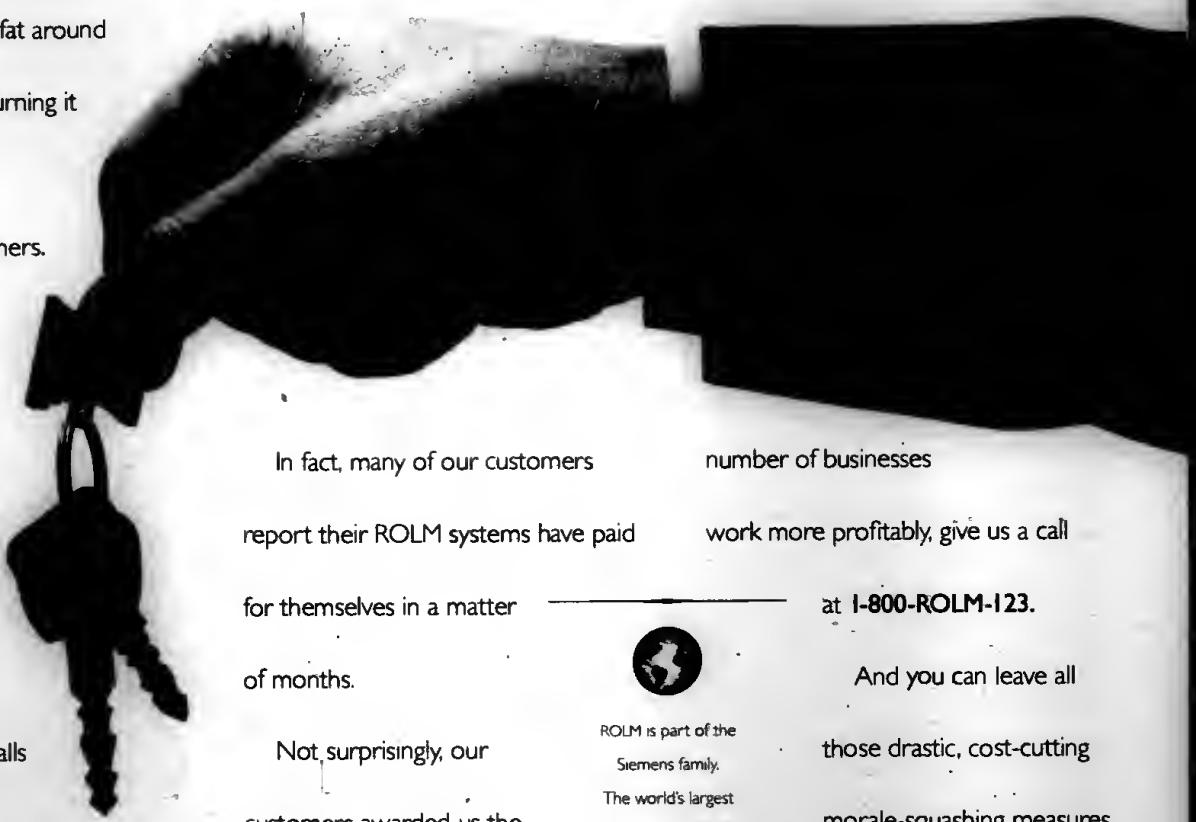

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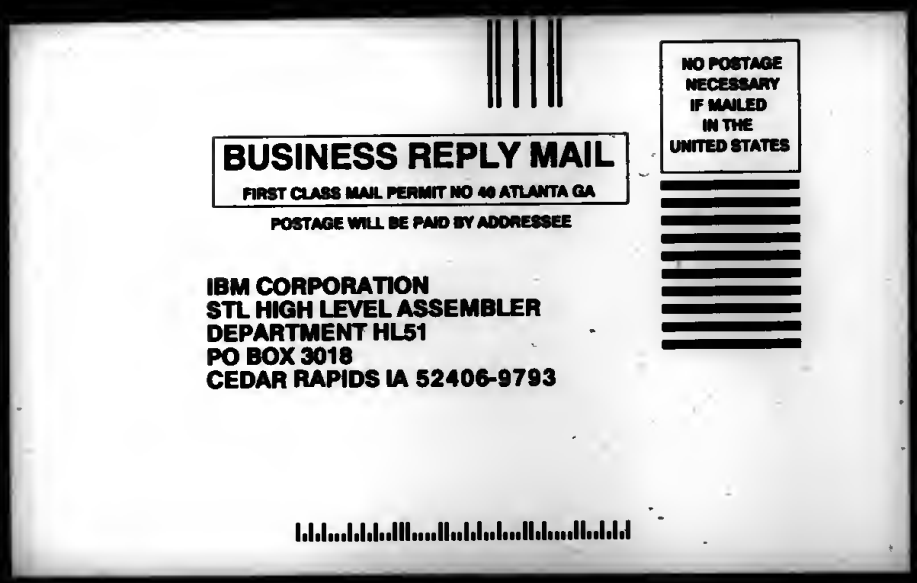

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Tool time

Be prepared for more skirmishing in the war of words between DBMS suppliers — this time on the tools front.

Tools for application development, heterogeneous database management and query monitoring are all crucial to developing distributed systems. The Gartner Group and other sources predicted that 1993 will be the year in which development for client/server systems will outweigh development for host-based systems — the beginning of a shift that will be felt for many years to come. Forrester Research in Cambridge, Mass., estimated that the market for client/server software will increase tenfold between 1991 and 1996, from $750 million to $7.5 billion.

Given those stakes, it's not surprising that another fierce rivalry is heating up between competitors on opposite shores of San Francisco Bay. At one time it was Oracle and Ingres vying for the top spot in the relational database business. This time Oracle is jockeying with two firms: Sybase and Informix.

Consolidated offerings

Oracle recently pulled its tools staff into a separate business unit and linked its offerings under the name Cooperative Development Environment. The time was ripe to take a step in this direction. Oracle's tool list had grown to 14, and with the company's application business faltering in the U.S., tools were becoming an increasingly important piece of the business.

Last week, Sybase announced its Omni SQL Gateway, which allows a Sybase customer to make use of multiple Sybase database engines on different servers as a single system. Oracle has had this capacity since the advent of Oracle 7, but Sybase upped the ante by allowing its users to treat a combination of Sybase and Oracle or Sybase and DB2 on different servers as a single system.

In addition, Informix, an upstart in the Unix market where Oracle has been finding much of its growth, announced its own set of graphical tools last month. Informix has been growing fast with desktop Unix users, and its initiative poses a challenge on a second front.

When it comes to tools, the large system database companies find themselves in the right place at the right time. They have already produced character cell-based tools to operate across different hardware labels, and now they are producing graphical versions in integrated tool sets. This places them in a pivotal position as customers look for ways to hand off the corporate data to end users while maintaining it in a centrally administered system.

At Oracle's press/analysts briefing Jan. 26 in San Francisco, Chairman Larry Ellison singled out Sybase among its competitors. He described it as the "Briggs & Stratton" of database engines. I think he was commenting on Sybase's former restriction to operating on one server while Oracle 7 could function as one system on multiple servers. It's also possible he meant to say Sybase was best on lawnmowers, while Oracle was a truck speeding down the data highway.

Why would Ellison pick on Sybase? Six years ago, when Sybase was a newcomer, Oracle's revenue was $131 million to Sybase's $6 million. In 1992, Oracle was a substantial $1.12 billion company with a growth rate of 15%, and Sybase was a $265 million company with growth rate of 65%. No one knows better than Oracle what high growth rates can do for a firm.

Users stand to benefit from the tool battle. As long as the vendors stay focused on cross-platform and cross-system functionality, the customer is likely to gain greater capability for building client/server applications and perhaps pick up a bargain or two in the process.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

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Spreadsheets

Dueling for Windows

Lotus hopes Improv, new 1-2-3 will crowd Excel

By Michael Vizard

Although Lotus Development Corp. is readying a major push this summer to upgrade its installed base of 1-2-3 users to a substantially improved version of 1-2-3 for Windows, the days when the spreadsheet easily dominated its market appear to be gone forever.

The current reigning king of the Windows spreadsheet market is Microsoft Corp.'s Excel for Windows. But Lotus still commands a 90% share of the DOS spreadsheet market and is pursuing a dual Windows spreadsheet strategy: getting 1-2-3 diehards to upgrade to a much improved version of 1-2-3 for Windows or adopt a new spreadsheet format using Improv for Windows.

Version 4.0 of 1-2-3 will include much better designed graphical environments and a Version Manager feature — aimed at stunting interest in Excel's Scenario Manager facility — that makes it easy for users to link diverse cells, spreadsheet formulas, models and groups of spreadsheets to perform what-if analyses.

At the Improv

At the same time, Lotus is pushing an Improv offering that provides an even richer set of analysis tools across multiple dimensions, which can be used to allow users to easily display the same values in different models. During the last two months, Lotus has shipped more than 125,000 units of Improv as part of a special $99 introductory program.

"Improv is a real analytical tool that really stretches the abilities of 1-2-3," said Bruce Jaffe, executive vice president of Bell Industries in Los Angeles.

"I think people will use 1-2-3 for quick and dirty calculations and use Improv for presentations. Improv is a more structured environment, but ultimately I think people will switch to Improv once they become comfortable with it," Jaffe said.

But the arrival of Improv and the promise of an enhanced 1-2-3 for Windows is only going to stem the flow of Windows market share that has already moved over to Excel or Borland International, Inc.'s Quattro Pro for Windows.

"Lotus really hurt themselves by coming out with a mediocre 1-2-3 Windows product," said Daniel Gasteiger, a principal at consulting firm Gasteiger & Delonas, Inc. in Cambridge, Mass.

Loyal user base

However, Gasteiger said the damage done was not catastrophic because most 1-2-3 users remain loyal to Lotus. "I think we'll finally see the 1-2-3 base move to Windows with the new release. They've been pretty content to sit back and wait for Lotus to get it right," Gasteiger said.

Gasteiger added that he does not expect Improv to become a dominant product in the spreadsheet market.

"Users like spreadsheets because you can use [them] with very little notion of where you are going to go. It's like a scratch pad. I don't think Improv will be a contender

Lotus, *page 41*

How Tech

The Version Manager feature in 1-2-3, which will allow users to create multiple ranges in a single cell, a block of cells or multiple spreadsheets, is an outgrowth of the Chronicle communications technology that Lotus intends to use in other products, including its Ami Pro word processor.

[redacted]

Christopher Lindquist

Human error and Internet

[redacted]

We all make mistakes. Unfortunately, computers don't handle mistakes very well, as anyone who tried to send me mail over the Internet using my new address found out. Yes, I confess, there was a typo. My real address is chrisl@netcom.com (not chrisl@netcom.netcom, as the last column stated).

My second mistake was telling readers that Internet tutorials existed and then not listing any. As my voice mail and E-mail attested, people want details. Sorry to leave you hanging like that.

A couple of books that interested users might want to try are *The Whole Internet User's Guide and Catalog* by Ed Kroll and *Zen and the Art of the Internet: A Beginner's Guide* by Brendan Kehoe. There are plenty of others available, but these should be a good start.

And speaking of starts, some nits are starting to get picked about MS-DOS 6.0. When it is installed, the upgraded MS-DOS installs a Tools menu item on the File Manager, not to mention on the menu bar for Symantec's Norton Desktop for Windows. That would be fine, but Norton Desktop for Windows already has a Tools item, and after you install MS-DOS 6.0, you'll have two — so much for intuitive interfaces.

Lindquist, *page 41*

IBM PC Co.'s uphill battle

How Robert J. Corrigan plans to come out on top

Robert J. Corrigan did not inherit an enviable task last October when he was named the first president of the IBM PC Co. IBM faced myriad problems in the PC hardware business; not the least of which was a steep decline in market share and an unprofitable business unit.

While it is too early to call Corrigan's efforts since a complete success, IBM does appear to have halted its market share decline and regained some of its lost image as a technology leader. Corrigan spoke recently with *Computerworld* executive editor Paul Gillin and senior writer Michael Fitzgerald.

Q. You have been here five months now. Is your job getting any easier?

A. Has it only been five months? It seems like two years. I don't know how this could be much harder, doing a restructuring.

Q. What are your top priorities at this point?

A. First, to sustain what we've done. We've created the organization and brand structures so that we can have greater segmentation and service more of the market. The first priority is to keep up the rate and pace of development and the organization. Second is to try to catch demand. My third focus is to do everything I can to get control over all the elements of cost. The fourth is to get my channels running efficiently.

Q. Where do you see yourself cutting costs?

A. I think I have opportunities in procurement and in order processing, distribution, those kind of things. I do two to three times the units of [other PC companies], and I get a lot of leverage when I make small improvements.

Q. Do you see the direct channel becoming a much bigger part of your business?

A. I don't think it will dominate it, but it is certainly a channel we weren't participating in that was taking up 15% to 20% of the business in the industry. I will compete face-to-face in the channels where my competitors are, and if you find somebody who's competing with me and I'm not there, let me know and I'll compete there. One of our problems was we were losing share in our industry, but not where we were competing. Where we were competing, we were OK.

Robert J. Corrigan: *IBM must sustain its development pace*

Q. Do you see yourself gaining market share back?

A. I'm gaining significant share in the retail channel. I think the branded players are winning unit share, and I expect to win unit share also. I think the major issue will be the relative share of the different participants.

Q. Has price cutting run its course?

A. I think you'll see continued price pressure, but since the dollar numbers are lower, the impact on buying decisions are getting [smaller]. Does a $50 difference in price make you shift from one brand to another? I think sooner or later the price of the product is not going to be the dominant variable, and you're seeing us and the major participants starting to position against the price-only competitors by offering value packs.

Q. What are your plans for Microsoft's Windows NT? Do you have difficulties dealing with Microsoft?

A. We'll support all operating systems, whether they come from IBM or Microsoft or Novell or whatever. We are involved very closely with Microsoft. We should be. We're their No. 1 customer. We are not trying to be a participant in the OS/2 vs. Other Systems war. To be a credible hardware provider, you cannot bias yourself with a one operating system solution.

Q. Do you feel pressure to use IBM technology in your PCs, such as the SLC chip?

A. My principal interest in the SLC was that it was 3.3V, and it was a way to get 3.3V into my products in 1992. If I can leverage IBM technology, I try to leverage it. . . . If the technology isn't there, I'm not trying to force it. I'm not choosing IBM just because it's IBM.

Q. How committed are you to Micro Channel Architecture?

A. I think it's still a superior architecture.

IBM's Corrigan, *page 41*

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ANN MARIE WAS LIKE MOST BUSINESS EXECUTIVES.

Beneath her stoic corporate persona, beneath her stylish suits

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And she knew there was only one place to get it all. But someone

was out to stop her. "Over my dead body," thought Ann Marie.

IT DIDN'T MATTER THAT ANN MARIE'S DOOR WAS CLOSED, THE SCREAMING AND SHOUTING COULD BE HEARD ALL OVER THE OFFICE. Suddenly, a large thud. Then silence. Not a peaceful silence, but the kind that whispers, "Stay away, if you know what's good for you." I couldn't. As I cautiously cracked open the door to Ann Marie's office, she was sitting on her desk, feverishly scrubbing one shoe. "You know how to get blood out of suede?" she asked. Just then, I noticed the door was stuck on something. I peered around to see what was blocking the way. It was John. His lifeless body looking like a crumpled piece of paper. "He didn't want BASF to be our primary supplier of computer media," she explained. "Is he...?" I was shaking so much my mouth couldn't form the word. "No," shot back Ann Marie, "But

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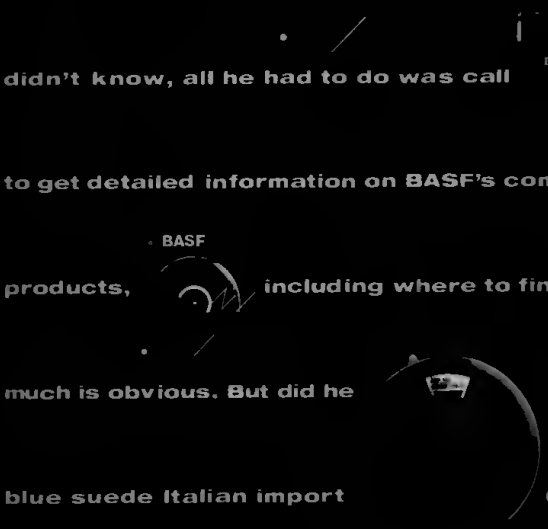
stability
and abrasion
resistance
of any
Magnetic Tape
Cartridges," said
Ann Marie. John
didn't stand a chance.
But if you ask
me, an idiot like John didn't deserve one.
BASF
BASF
BASF
BASF

WHAT LUNKHEAD DOESN'T KNOW THAT BASF

INVENTED MAGNETIC MEDIA. I mean, you can tell just by looking at their products. If only John had done that, he would have seen how their back-up cartridges use select data grade tape, with fewer errors for greater efficiency. And how their rewritable optical disks are formatted to ISO standards, for use in image processing, CAD/CAM and desktop publishing. There's no excuse for John's ignorance. If he didn't know, all he had to do was call 1-800-343-4600 to get detailed information on BASF's complete line of computer media products, including where to find them. John was stupid, that much is obvious. But did he really deserve a size 7 blue suede Italian import upside his head? Yeah, he did.



Demand It.

BASF

PDAs compete at CeBIT '93

By IDG News Service
HANNOVER, GERMANY

■ Personal communicators or personal digital assistants (PDA) continue to be one of the most talked about forthcoming technologies, even though the products themselves remain little more than prototypes.

At the recent CeBIT '93 exhibition, each of the major camps pushing to establish industry standards showed off its latest wares.

Apple Computer, Inc. demonstrated the latest beta-test version of its Newton PDA and announced a series of third-party licenses for the technology. Tandy Corp.'s Grid Systems showed its "Zoomer" personal communicator, promising a fall release. And talk of PDA plans for industry giants such as Compaq Computer Corp., IBM and Siemens/Nixdorf Informationssysteme AG created a buzz on the show floor.

Looking to bolster support for Newton, Apple announced licensing deals allowing Motorola, Inc., Siemens and Kyushu Matsushita Electric to use the Newton architecture in their products.

While Apple's push to make Newton an industry standard gained momentum, Siemens has followed Ing. C. Olivetti & Co. to become the second major European computer maker to endorse a rival technology based on the Go Corp. pen-point operating systems and the AT&T Hobbit chip set technology from EO, Inc. EO's PCN will also be sold in Japan by Matsushita Electric Industrial Co. and Marubeni Corp. Also planning Hobbit/Go-based devices are NEC Corp and Toshiba Corp.

Not to be left out

But while Newton and Hobbit-based products have a lead in terms of being shown as prototypes, Intel Corp. and Microsoft Corp. made their presence felt by promising to make the PDA market at least a three-horse race.

Microsoft is working on a version of Windows, scheduled to debut within the next six months and tentatively called WinPad, that is based on Microsoft's core Modular Windows technology, said Paul Maritz, senior vice president of Microsoft's systems division.

Microsoft's approach is to provide a common operating system core from handheld devices up to network servers. In contrast, Apple offers different operating systems for handheld, desktop and enterprise systems.

"We think that in the initial phases of the [PDA] market, commonality with desktop machines and sharing information with desktops" will be important to users, Maritz said.

Hardware vendors eyeing Intel-compatible PDA products include Compaq and IBM. Compaq and Microsoft are planning a joint announcement on PDA technology that could be made public as soon as next month, according to one well-placed source. Meanwhile a source within the IBM PC Co. said IBM is planning a fourth-quarter release of a PDA using its own line of low-power, Intel-compatible processors.

Also in the Intel-compatible camp at CeBIT was Nimble Computers, a California start-up, which showed the NimblePad. The machine uses 386 and 486 processors from American Micro Devices, Inc. and runs Windows for Pen Computing, as well as a pen shell for DOS.

Racing these products to market is Apple's Newton, which will finally materialize from its vapor state to solid form this summer at a price of less than $1,000, according to Gaston Bastiaens, vice president and general manager of Apple's Personal Interactive Electronics Division.

"The Newton technology has been designed from the ground up, with an integrated architecture. The operating system is not adapted from some existing desktop technology. With small mobile devices it is simply not good enough to get hardware from one source, to take an operating system from another source, put them together and assume they are going to work," Bastiaens said.

"We have a different philosophy than Apple," Maritz countered. "Apple thinks this is a distinct market from PCs, but we think in the initial phase there must be a high degree of commonality with the desktop for two reasons. First, the people who are likely to buy [PDAs] also correlate highly with people who use PCs, and second, people will want to share information with their desktop system.

But while Apple and Microsoft vie over marketing prestige, EO will likely be the first out of the gate with a live personal communicator when it starts shipping its product in May.

On a roll
For all the hype they're getting, PDAs are still a twinkle in some vendors' eyes. But that is changing. While voice currently represents the major wireless growth market, data-oriented applications should take off in two years, according to The Yankee Group. The research firm estimated that there will only be about 2,000 users of PDAs this year but expects that number to swell to 1.8 million by 1998.

Lindquist

CONTINUED FROM PAGE 39

And some users are complaining that the features that would have allowed MS-DOS 6.0 machines to act as clients on a Windows for Workgroups network were removed from the shipping product. Microsoft says the functionality will be provided in a separate product and that it was removed because corporate customers didn't want users messing with it. But some beta-test users think it just wasn't stable enough by the release date.

The advent of MS-DOS 6.0 certainly won't attract everyone, and one developer noted on a bulletin board that he was looking to get a copy of MS-DOS 2.0 on which to test his new software product before shipment. A couple of people offered to help, but one person offered some advice: "If someone is using DOS 2.0 they aren't BUYING any new software. You are wasting your time."

Someone should do a study on the effect of display electromagnetic field a on the brain cells that control the sense of humor. Here's the latest word on what IBM will stand for now that Louis Gerstner is in control: Itsy-Bitsy Machine Corp. And that one came from the OS/2 conference.

One other thing: A while back I reported a (wholly unscientific) finding that the number of OS/2-related messages on bulletin boards was catching and even surpassing the number of Windows messages. That trend seems to be reversing itself. Stay tuned for more information as it becomes available.

You have to love Seattle. Seems everyone I've met, including a cabbie, knew Bill Gates "back when he ran a two-bit company." No one may know you when you're down and out, but when you're a recently engaged billionaire, everyone does — and is glad to tell people about it. If you have anything to tell, lob me a message via MCI Mail at 549-8464, CompuServe at 72360,2005 or Internet under chrisl@netcom.com.

Lindquist is a *Computerworld* West Coast correspondent.

IBM's Corrigan

CONTINUED FROM PAGE 39

it's used exclusively in our RS/6000, and it's one of the best ways we know to make multiple bus mastering and connections within a structure. We will continue to support it. It's clear that a lot of our customers didn't need it. Some of the things that were only able to be done in a Micro Channel environment will be done by [Intel Corp.'s] Peripheral Connect Interface, so we'll support that and support PCMCIA.

Q. Where does the information systems manager fit into your hierarchy?

A. It's our dominant customer. The role of the IS manager is a lot more critical than it was before. Companies are starting to realize how critical they are and how if you're not careful, the rightsizing environment can become a capsizing environment. Somebody needs to be the architect for the system that's being installed in a downsizing environment, and that's the responsibility of the IS manager.

Lotus challenges Excel

CONTINUED FROM PAGE 39

for spreadsheet of choice because it's very structured. It will be a handy tool for certain applications, a niche product. I couldn't see adding those same kinds of capabilities to conventional spreadsheets without creating a klunky product," Gasteiger said.

Nevertheless, a variety of add-on packages provide 1-2-3 and Excel users with many of Improv's analytical capabilities without requiring them to adopt a new spreadsheet format.

> At a rate of 125,000 units per month, it would take about 13.3 years for Improv to match the installed base of 1-2-3, which has 20 million users.

For example, Sniper Corp. in Warren, N.J., Objective Software, Inc. in Redwood City, Calif., and Arbor Software Corp. in Santa Clara, Calif., all provide databases specifically designed to integrate spreadsheets by storing values in a table on a database. These values can then be displayed in either 1-2-3 or Excel spreadsheets.

Bristol-Myers Squibb Co. uses Sniper's TM/1 Perspectives to roll up spreadsheets created across the organization into a central resource for analysis of the data. "The data is actually stored in tables on the database so sharing becomes easy. TM/1 will support up to eight dimensions, but we usually only use about seven," said Tom Boccellari, manager of budget systems.

Boccellari noted that like most sites, his company supports a variety of spreadsheets. "We're a Lotus shop, but I'm an Excel bigot," he said. Thus far, he has noticed that users who have opted to go to Windows and who favor Apple Computer, Inc. Macintoshes have purchased Excel, while DOS users overwhelmingly prefer 1-2-3.

"But we're still in the very early stages of moving to Windows, and a lot of the DOS people will probably want 1-2-3," Boccellari said.

Ultimately, Boccellari added, the need for a larger database to support the sharing of spreadsheet data may cause him to investigate replacing TM/1 Perspectives with a larger relational database engine such as the SQL Server from Sybase, Inc.

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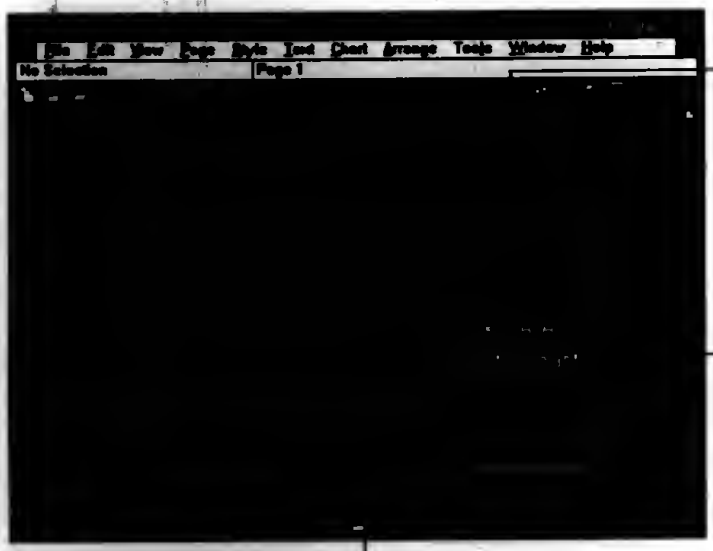

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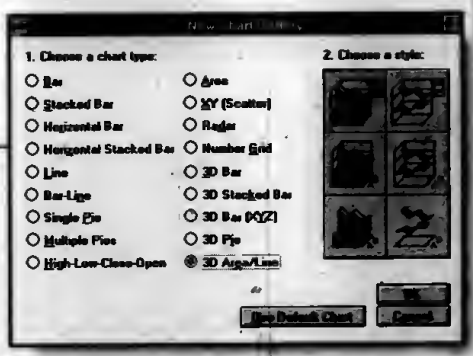

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Systems

Leading Edge Products, Inc. has introduced the N4/SLC-25, a 486-based notebook computer.

Preinstalled software includes Microsoft Corp.'s Windows, MS Works for Windows, MS-DOS and McAfee Associates' Viruscan antiviral software. Standard features include a 486SLC, 25-MHz microprocessor, 80M-byte hard drive, 4M bytes of memory upgradable to 8M bytes and a 1.44M-byte, 3½-in. single floppy drive, according to the company.

The system offers 256K bytes of video memory on the motherboard, and it has a Super VGA video controller that supports 640- by 480-pixel resolution with 64 shades of gray.

The N4/SLC-25 costs $1,799.

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(508) 836-4800

Software application packages

Physiotronics Corp. has introduced Sherlock 1.1, software for IBM PCs running Microsoft Corp.'s Windows 3.1.

According to the company, the software provides an intuitive and visual filing and retrieval system for both individual and network users.

Sherlock's features include automatic launching of the correct application and the selected document; eight optional fields that categorize files by document type, contact and keywords; and instant retrieval of saved files using a "best fit" look-up including string/word/sentence search.

Novell, Inc. NetWare compatibility with user-assignable network rights for files and folders is also provided.

Sherlock costs $249.99 for single users and $695 for a five-station local-area network pack.

▶ *Physiotronics*
135 W. 52nd St.
New York, N.Y. 10019
(212) 887-9555

PowerSolutions for Business has introduced PlanMaker, business plan software.

The program offers financial forecasting and word processing capabilities in addition to three completely written business plans in memory.

Sample plans can be browsed, imported, excerpted and edited into the user's own business plan, according to the company.

PlanMaker is available in both DOS and Apple Computer, Inc. Macintosh-based versions. It costs $129.

▶ *PowerSolutions for Business*
1920 S. Broadway
St. Louis, Mo.
(314) 421-0670

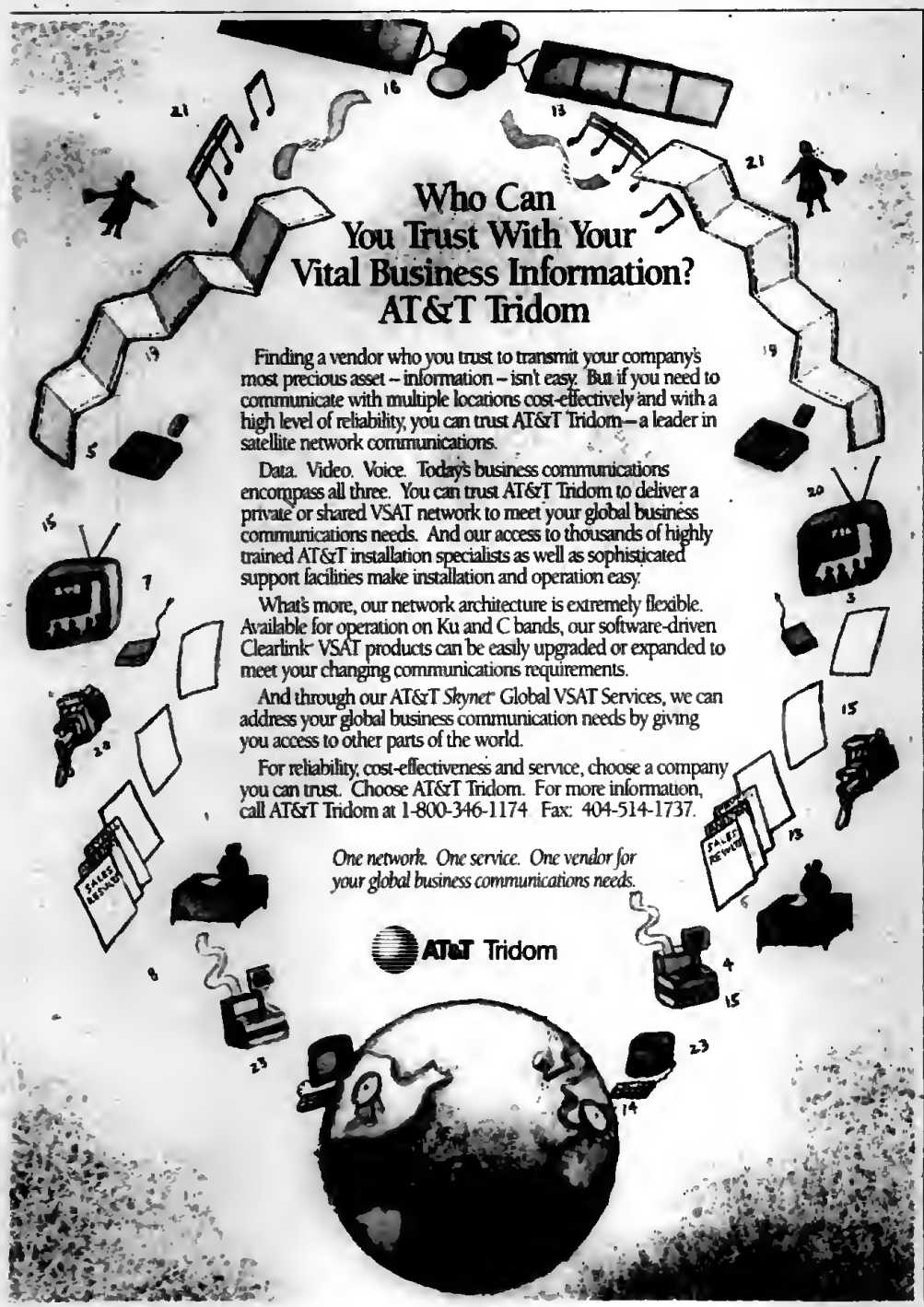
Peripherals

Fujitsu Computer Products of America, Inc. has introduced ScanPartner Plus, a desktop document imaging system.

ScanPartner Plus comes bundled with three software packages: ScanPartner Plus for DOS/Windows unites ScanPartner t0 with Compulink Management Center, Inc.'s LaserFiche MinuteFile for an entry-level desktop management system; ScanPartner Plus for a Sun Microsystems, Inc. workstation combines the Fujitsu ScanPartner t0 and Xerox Imaging System, Inc.'s ScanWorX software; and Blueridge Technologies, Inc.'s Optix software is for Apple Computer, Inc. Macintosh users.

ScanPartner Plus costs $2,495.

▶ *Fujitsu Computer Products Products of America*
2904 Orchard Pkwy.
San Jose, Calif. 95134
(408) 432-6333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And through our AT&T Skynet Global VSAT Services, we can address your global business communication needs by giving you access to other parts of the world.
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Ethernet cards promise speed

Parallel processing enables simultaneous data transmission, reception

By Lynda Radosevich

■ Unwilling to commit to expensive and emerging high-bandwidth local-area networks, some companies are turning to the latest generation of Ethernet cards to solve a number of networking problems.

Problems solved include freeing up bandwidth by moving data packets on and off the wire faster, freeing computer memory and providing a stable, fast network for running Microsoft Corp. Windows applications.

The cards use parallel processing technology that allows an adapter to transmit and receive data packets at the same time. The result is performance increases of up to 50% for costs of approximately $200 per card.

While non-Ethernet networks such as Fiber Distributed Data Interface (FDDI) offer faster data transmission rates, costs average about $1,500 per node. And emerging networks such as 100M bit/sec. Ethernet and Asynchronous Transfer Mode are not yet stable and standardized among vendors.

The Grumman Space Station in Reston, Va., part of Grumman Corp., is using parallel tasking Ethernet cards from 3Com Corp. in its Novell, Inc. NetWare-based file servers because "we've gone to great expense to put in high-performance disk controllers and hard disks and wanted to match that performance on the network," said Terry Price, senior network engineer at Grumman.

Price said he saw typical network throughput jump from roughly 500K bit/sec. to 800K bit/sec., and end users saw their applications load faster. "In standard Ethernet technology, there is always a bottleneck because there is more than one device waiting. What we're trying to do is get packets on and off the wire as fast as possible," he said.

While Price said he would like to supply all end users with the new Ethernet cards, budget constraints allow him to equip only the servers. Furthermore, tight budgets also preclude his installing FDDI cards at users' desktops, although he is considering an FDDI backbone.

"It's a cost vs. return issue. If it takes a person 15 seconds to load [Microsoft] Windows vs. 30 seconds to load Windows, how do you put a price on that?" Price asked.

For Davis & Co., a law firm in Vancouver, British Columbia, installing parallel processing Ethernet cards is part of a larger effort to assure network stability before the company moves critical applications off its Digital Equipment Corp. VAX machines.

"Now the hardware is so solid in terms of stability, we've got to match that" on the LAN, said Shirin Karmali, systems manager at the law firm. "Currently, we have 99% uptime. We want to make certain that the LAN's physical performance isn't an issue because we know we will have Windows software issues, and we want to focus on those."

Karmali said she was "blown away" by the performance of parallel processing Ethernet cards from 3Com running over Category 5 unshielded twisted-pair wiring. She had considered a fiber-based network but found the costs prohibitive, she said.

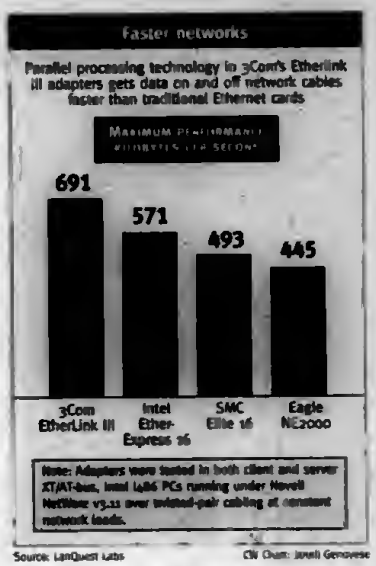
"For the time, we are going with the fastest 10M bit/sec. Ethernet we can" for a 140-person network, Karmali said.

Improved memory allocation led Texaco's Neches Chemical Plant in Port Neches, Texas, to choose parallel processing Ethernet cards from DEC. The plant will purchase the cards for 150 new installations and gradually replace older cards, according to Sam Desmond, information systems programmer.

The cards' 2K memory mode option, shared memory and dynamic buffering let Neches Chemical load network drivers in a PC's high memory, freeing up conventional memory for applications. "This affects the end user because there were a few programs that wouldn't run under Windows because of our network drivers," Desmond said.

New Ethernet cards can transmit and receive data at the same time.

- DEC: EtherWorks 3 Turbo 16-bit adapter for Extended Industry Standard Architecture (EISA) machines. The cards work with Novell's NetWare, Microsoft's LAN Manager, Banyan Systems, Inc.'s Vines and DEC's Pathworks. Prices start at $155 per card.
- 3Com: 16-bit XT/AT bus Etherlink III card, shipping since August 1992. 3Com recently announced a combination adapter XT/AT bus card, a 32-bit EISA and a 32-bit Micro Channel Architecture card. Priced between $199 and $349, the cards come with drivers for NetWare, LAN Manager, Vines and Pathworks.


Faster networks
Parallel processing technology in 3Com's Etherlink III adapters gets data on and off network cables faster than traditional Ethernet cards
691
571
493
445
3Com EtherLink III
Intel EtherExpress 16
SMC Elite 16
Eagle NE2000
Note: Adapters were tested in both client and server XT/AT-bus, Intel 1486 PCs running under Novell NetWare v3.11 over twisted-pair cabling at constant network loads.
Source: LanQuest Labs
CW Chart: Janet Genovese

Chase banking on Notes to reach customer desktops

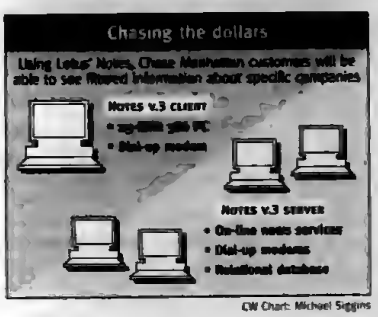
By Michael Vizard
NEW YORK

Coinciding with the release of Version 3.0 of Lotus Development Corp.'s Notes, The Chase Manhattan Bank NA has begun a project to extend the use of Notes beyond its borders by delivering financial information to its customers via Notes.

Enabling this project is the selective replication services that Lotus has added to Notes 3.0. This feature allows users to download portions of a Notes database instead of an entire copy of the database.

"Now we can have just one database for an application, rather than having to maintain multiple databases," said Michael Mandelbaum, the Chase vice president assigned to assess what it will take to implement the project.

Within Notes, replication is the primary tool for transferring documents and information. This capability merges changes made to a specific Notes database with the latest database entry serving as the main document. All other previous attachments made to a Notes database are then viewed as response documents.


Chasing the dollars
Using Lotus' Notes, Chase Manhattan customers will be able to see filtered information about specific companies
NOTES v.3 CLIENT
• Dial-up modem
NOTES v.3 SERVER
• On-line news services
• Dial-up modems
• Relational database
CW Chart: Michael Siggins

By adding support for selective replication, users no longer need to transfer an entire copy of a Notes database from the server to their system. As a result, it is now feasible for Chase to consider installing Notes at its customer sites as an information delivery vehicle.

"It could be quite a competitive advantage if we could get customers' information quickly in a format they can analyze," said Craig Goldman, Chase's senior vice president and chief information officer.

Notes is already used at Chase to create an environment where information is delivered directly to desktops in a timely manner.

"Notes creates a whole new attitude for the IS department. In the past, IS was always focused on the back office. With Notes, you can focus on the front office," Goldman said.

Front-office activities at Chase, where bank employees interact directly with customers, are the company's front line, and Goldman said getting information systems people on that front line alongside business executives is his primary mission.

To accomplish that goal, Chase needed an application development environment that would let its people react quickly to new business opportunities.

"With Notes, you can develop applications in days that previously, if they were at all possible to do, would have taken months and years. And it's pretty easy to learn, so you can turn around people who are used to 3270 Cobol-crunching

Chase, *page 49*

ON SITE

Chase Manhattan Bank
New York

Challenge: To decrease the time it takes financial services customers to receive information from Chase traders.

Technology: Lotus Notes 3.0, with its selective replication feature, enables Chase to send documents directly to a customer's desktop PC. Chase has 2,700 employees on the Notes network.

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Client/server medicine can be bitter pill

By Maryfran Johnson
FRAMINGHAM, MASS.

If all was well with *Computerworld*'s client/server conversion, this story would be written and edited on our new system.

Alas, it is not. These words were conceived and executed on a dumb terminal tethered to our old Atex publishing system, which is running on a tired Digital Equipment Corp. PDP-J11.

Computerworld's open systems migration is now many months overdue and we are still struggling, most recently with a series of inexplicable network failures that seem to be the fault of the way vendor Atex, Inc. had implemented the PC/Network File System (NFS) connection from writer clients to the pair of RISC System/6000 servers.

"This is a very frustrating time right now," said Paul Gillin, *Computerworld*'s executive editor. "We had hoped to move all the writers over in October 1992, but because of some nasty technical and reliability problems, we still can't."

There are specific problems with queue management — the way we file and keep track of stories — that are apparently related to using an MS-DOS file system in a Unix server configuration.

What's in a name

One weakness of the new file structure is that multiple files can have identical names and can be scattered throughout a variety of subdirectories. That could lead to the wrong version of a story slipping through to publication.

"We need to impose new procedures for file naming," Gillin said. "That's another training issue."

Our information systems department is also less than thrilled these days with support and service from Atex, the Billerica, Mass.-based publishing software vendor that is developing the package we are using. Atex changed ownership three months ago, and the resulting management upheaval left *Computerworld* managers feeling less than special.

"It has been interesting to live through this transition," Linda Nelson, *Computerworld*'s vice president of IS, said wryly. The engineers who were once available to answer our questions, for example, are no longer allowed to deal directly with customers, she noted. And Atex's support department was in a confused state for weeks as it awaited the appointment of a new director.

There have been delays of up to six weeks to get an answer from Atex about specific bugs or problems with the software.

"There seems to be a sense from the Atex people that once our redesign was finished and our copy desk was up on the new system that we were done," Nelson said. "But we're far from done."

The worst of our recent troubles occurred in the aftermath of a severe mid-March blizzard, which sparked concern in our IS department about power surges that could damage our database. So both of our RS/6000 servers were turned off, which provoked a peculiar dual failure in the Small Computer Systems Interface I/O controller, Nelson explained.

Once the servers were brought back up, the disk mirroring and High Availability/NFS software on the RS/6000s no longer worked. No one knows why. And while Atex and IBM have worked hard with the IS department to resolve the problem, both companies seem to feel the other vendor is ultimately responsible.

Computerworld's Linda Nelson: *'We're far from done'*

Atex officials acknowledge the obvious: There are still problems to be worked out for *Computerworld*.

Al DePalma, the new director of customer support at Atex, maintained that those problems are more in "communication and expectations" than anything else.

Some of the Atex vs. IBM finger-pointing is essentially *Computerworld*'s own version of "Welcome to the world of standard platforms," DePalma said.

Staff writer Lynda Radosevich was one of the people caught by our now-infamous "network connection lost" problem when her new 80386-based PC froze without warning during an important telephone interview.

"Working on the new system is like owning a marvelous new guitar that promises to let me create more melodious music — but the strings keep snapping when I try to play," Radosevich said.

Still, there are a few courageous staff members who persist in using their PCs for something other than playing solitaire under Microsoft Corp.'s Windows 3.1.

"What's really great for me with the new system is the ability to sit in my cubicle and log onto the Internet and also onto Decuserve — the user network for the Digital Equipment Computer Users Society," said senior writer Melinda Ballou.

James Connolly, technical sections editor, is doing about one-fifth of his work on the new system now. "But there are still significant problems with our hyphenate-and-justify function and with moving files around," he added.

No one mentions any cutover dates anymore or talks about when *Computerworld* will unplug the DEC PDP-J11 minicomputers that have anchored our data center for years. So many months have elapsed since the writers were trained on the new PCs that retraining classes are almost certain to become necessary.

"I still believe there will be big benefits in moving to open systems, but it's a colossal pain getting there," Gillin said. "The real benefit will be the choice of hardware and software you can bring in. Who's writing software anymore for PDP-11s?"

Chase Manhattan

CONTINUED FROM PAGE 47

applications," Goldman said.

"The challenge for us is: How do you turn around developers, secretaries and senior analysts and make them first-class citizens in a client/server world?" Goldman added.

One of Chase's premier Notes applications is a service that tracks reports from investment services such as Moody's and Dow Jones. If these reports on individual companies differ from the analysis created by Chase's people, the account representative is automatically flagged using code developed at Chase. Once the reports are reviewed, changes and explanations regarding those companies are then posted in a file that can be accessed by any member of the company.

Chase started using Notes in 1988, when the financial services market was experiencing a downturn. Knowing that Chase was more receptive to fine-tuning its products in a downturn, Goldman proposed retooling the bank's IS functions to give its personnel an edge over competitors by allowing them to share information easily across a network of PCs.

Chase began building the infrastructure to adopt a client/server environment that would deliver information directly into the hands of end users. And by 1990, Chase had established a "center of excellence" for Notes application development headed by Mandelbaum.

Chase has one of the industry's largest distributed networks, and 2,700 Chase employees use Notes to share information across that network worldwide.

Collaboration is key

Because Notes provides a collaborative environment where widely dispersed people can interact with one another, Goldman said, Chase has come to rely on the Notes database for applications that the bank previously would have deployed on PC databases running on Novell, Inc. NetWare servers.

"The collaborative stuff gives you an incredible amount of intangible benefits from Notes," Goldman said.

Because of these intangible benefits, Goldman said, the traditional return-on-investment analysis does not apply to Notes. "You could probably compare Notes to other systems, but how do you compare Notes applications to applications you could not previously have built?" he asked.

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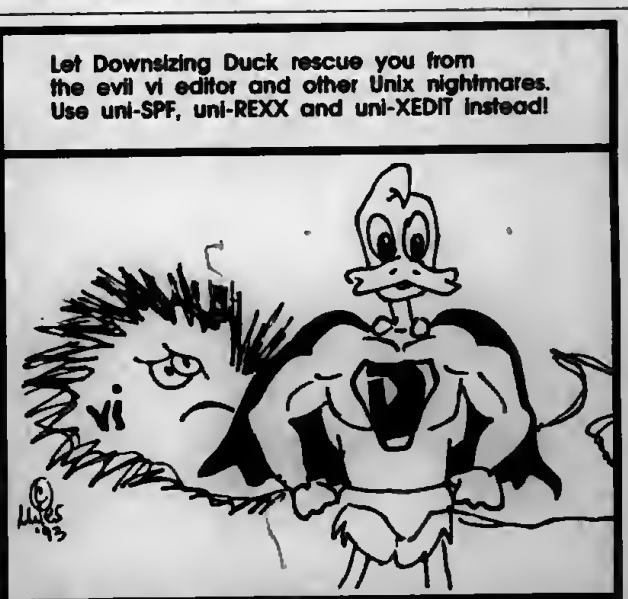

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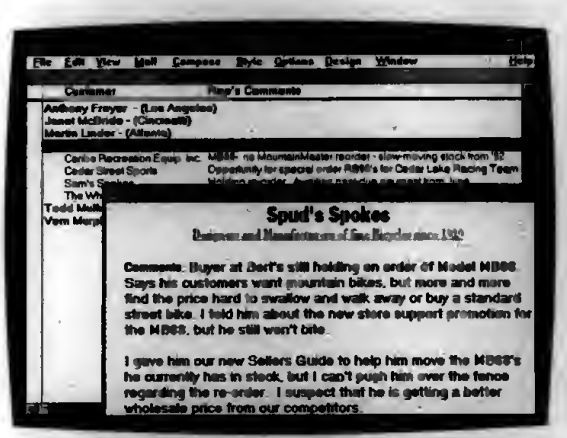
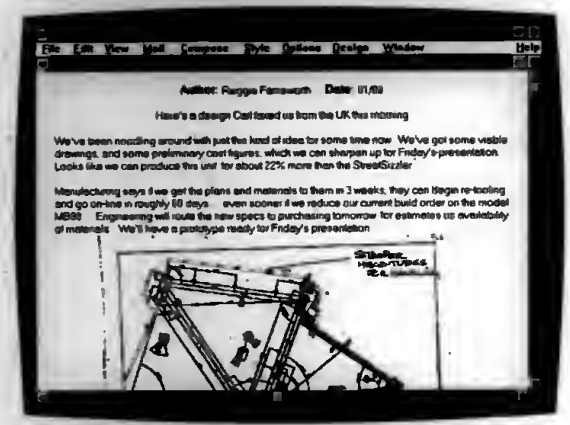
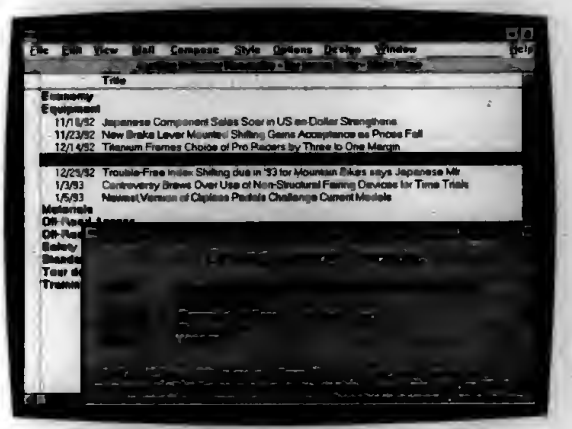
1. This is Michelle's Notes desktop. Each icon represents a different Notes application. She uses these to work with people all over the world including the field sales team, manufacturing, engineering, R&D, key customers and senior management. She regularly scans activities in the field by double clicking on ACCOUNT STATUS.



2. Today, she notices a number of entries regarding a slow-down in closing first quarter reorders for their most popular model, the MountainMaster off-road bike. It seems the market for this high-priced bike is beginning to dry up. This could be a major problem.



5. The next morning she checks into the DISCUSSION database and this time finds an entry from Reggie in R&D. Reggie had also read Jim's message and is responding with a possible solution his people have been playing with. He pastes in an autocad illustration faxed to him from the U.K. using a Notes incoming fax gateway.



6. With a presentation on Friday, Michelle gets down to some quick market research by opening up the CYCLING INDUSTRY NEWS database. An organized source of live industry data, it provides a news report on a French company that has a couple months head start developing a hybrid bike.

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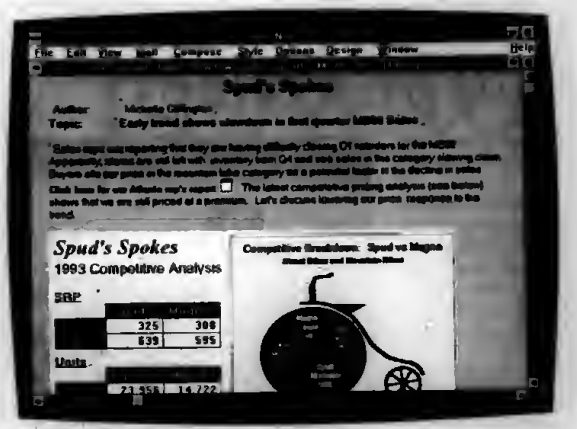
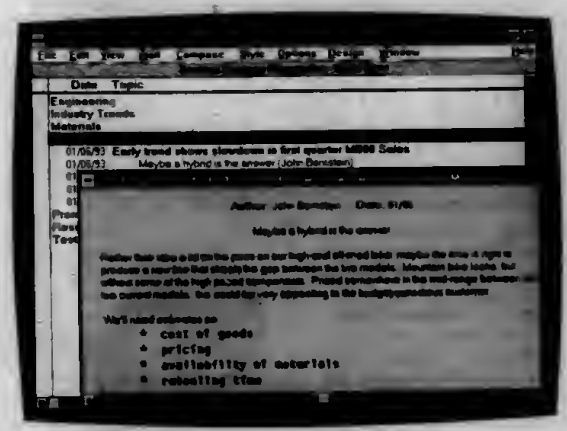
Michelle Cliffington is a product manager for a bicycle manufacturer. She's responsible for all product planning, market research and marketing activities for her product line. Notes helps her shift gears and rush a new product to market.

See how she accesses, tracks, shares and organizes information in ways never before possible. How

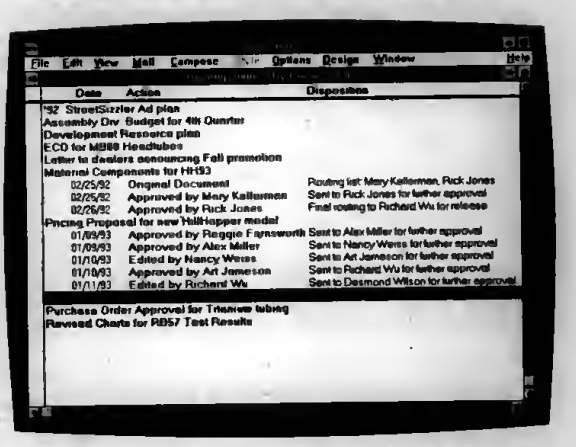
In Canada, call 1-800-GO-LOTUS. ©1993 Lotus Development Corporation, 55 Cambridge Parkway, Cambridge, MA



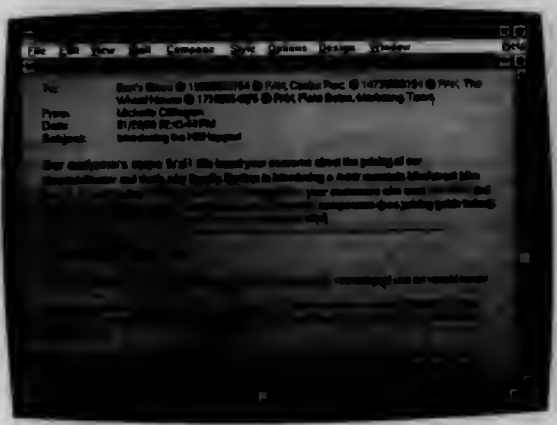
3. She decides to recommend a price-reduction and double clicks into the STRATEGIC PRODUCT DISCUSSION database. This provides an organization-wide forum to discuss issues and brainstorm solutions. She links the report from the Atlanta rep directly into her Notes document. Then she uses DDE to embed some 1-2-3® charts into her document as well.



4. Later in the day she re-enters the DISCUSSION database looking for responses. Her boss, John, has logged on from his hotel room in San Francisco. Rather than cut the margin, he suggests she explore the feasibility of adding a mid-priced bike to their line. He wants an initial presentation for Friday.


File Edit View Mail Compose Options Design Window Help
Date Action Disposition
'92 StreetSizzler Ad plan
Assembly Div Budget for 4th Quarter
Development Resource plan
ECO for MB88 Headtubes
Letter to dealers announcing Fall promotion
Material Components for HH93
02/25/92 Original Document Routing list: Mary Kellerman, Rick Jones
02/25/92 Approved by Mary Kellerman Sent to Rick Jones for further approval
02/26/92 Approved by Rick Jones Final routing to Richard Wu for release
Pricing Proposal for new Hill Hopper model
01/09/93 Approved by Reggie Farnsworth Sent to Alex Miller for further approval
01/09/93 Approved by Alex Miller Sent to Nancy Weiss for further approval
01/10/93 Edited by Nancy Weiss Sent to Art Jameson for further approval
01/10/93 Approved by Art Jameson Sent to Richard Wu for further approval
01/11/93 Edited by Richard Wu Sent to Desmond Wilson for further approval
Purchase Order Approval for Titanium tubing
Revised Charts for RB57 Test Results

7. A few days after routing her proposal to the product team, she wants to find out where it stands within the organization. She opens the ROUTING STATUS application to find that it has worked its way through the organization to Desmond, the senior decision-maker, and has been finally approved. So she's on her way.



8. Michelle closes the loop by communicating the news to their customers. Double clicking into the CUSTOMER FEEDBACK database, she faxes a memo directly from Notes to all retailers. In it she explains that the company has heard their problems and responded with the Hill Hopper. And with delivery in 60 days, they can order now.

can respond with h Michelle shift gears.

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Imaging, work flow expand at JC Penney

By Ellis Booker
DALLAS

To help handle significant growth in its life insurance unit, JC Penney Co. will deploy this summer an electronic document imaging and work-flow system, *Computerworld* has learned.

The system, from New York-based Image Business Systems Corp., uses IBM RISC System/6000 Unix servers and Microsoft Corp. Windows clients. It will initially support 250 customer service representatives at the insurance group's facility in Plano, Texas.

But the installation will likely grow to nearly twice that size, said David Evans, vice president of information systems at JC Penney.

Few large imaging sites

If it reaches 450 seats, JC Penney's facility would be among the largest 100 imaging systems in the country. According to IDC/Avante, a market research firm specializing in imaging and work-flow software in Framingham, Mass., only 75 imaging sites in the U.S. last year were in the 400-workstation range.

The deal would also be one of Image Business Systems' five largest from among its 35 customers, most of which have applications supporting 30 to 50 image-enabled workstations.

Last year, the company made headlines with the announcement of a $10 million, two-year project to image-enable some 700 or 800 insurance claims clerks at Louisville, Ky.-based insurer Humana, Inc. [CW, June 22, 1992].

Evans said he visited Humana and awarded the competitively bid contract to Image Business Systems based in part on the success of that project. Humana officials reached last week confirmed that the effort to streamline three service centers with imaging is on track, although they said only about 120 users have been put on the system so far.

"We probably won't be as big as Humana in any one place, but we might have large numbers of users in 10 or 20 locations," Evans said, adding that JC Penney plans to evaluate the July pilot with an eye toward putting Image Business Systems imaging in customer services operations elsewhere within the retailing giant.

Three of a kind

JC Penney already has two other imaging applications in production, both from TRW, Inc.

The first system, built in 1984 using a minicomputer and dedicated terminals, supports high-volume processing of credit-card remittance forms; the other application, a 2-year-old client/server system using Windows-based workstations and a Sun Microsystems, Inc. server, handles the processing of new credit applications.

According to Evans, while the new Image Business Systems application will manage a much lower volume of documents than the two TRW systems, it will offer significantly more sophisticated work-flow features.

"In the long term, we think it'll be critical to have image as part of an application and be able to control the work queues and work flow," he said.

The Image Business Systems deployment at JC Penney will be in three areas: claims, customer service and specialty insurance products. The vendor is deploying the systems in all three areas simultaneously.

JC Penney is specifically looking for an improvement in productivity to accommodate growth in business at JC Penney Insurance, which posted income of $101 million last year, up from $79 million in 1991 and $55 million in 1990.

But JC Penney is also looking at extending the life of a series of CICS applications resident on an IBM mainframe by adding an imaging component and off-loading some portions of this application to the RS/6000 image server.

This points to the little-known fact that of all current client/server installations, the largest deployed applications are based on imaging. "IBS believes work flow will take the second position as the largest application to move to a client/server architecture," said Jim Tagliareni, IBS' senior vice president of operations.

JC Penney's David Evans: *Imaging/work-flow system could reach 450 seats*

Imaging takeover

While paper is still the dominant 'work-flow' control medium at JC Penney, it is slowly being replaced by electronic imaging and software. "It's the ability to send records, to flash an image, to anywhere in the company," explained David Evans, vice president of IS at JC Penney. Imaging requirements have been a major catalyst in JC Penney's ongoing program to roll out 56K bit/sec. communications lines to its store locations across the country.

Electronic mail

Intelligent Software Solutions, Inc. has released the Windows Pink Pad E-Mail System.

According to the company, the product will be bundled with the Windows Pink Pad Phone Messaging system. By using the Pink Pad format, incoming messages can be collected and forwarded and electronic mail can be sent across Microsoft Corp.'s Windows-based networks.

Features include automated reply to a received message, return receipt request, password protection, pop-up notification on receipt of a new message and built-in message-based backup and restore.

Seamless interconnectivity between phone messaging and E-mail messaging, drag-and-drop support, automatic deletion of old messages and the ability to track frequent callers are other features.

The Windows Pink Pad E-Mail System runs under Windows 3.1 on Banyan Systems, Inc.'s Vines, LANtastic, PC LAN and Novell, Inc.'s networks.

The product costs $199.99.

▶ *Intelligent Software Solutions*
3896 19th St.
San Francisco, Calif. 94114
(415) 552-4965

DG adds imaging options to Aviion

By Melinda-Carol Ballou

Data General Corp. announced low-priced imaging products for its Aviion family of workstations, joining vendors such as Wang Laboratories, Inc. and Digital Equipment Corp., which are also targeting this market in the U.S.

Dubbed AV Image and based on technology contributed from a range of third parties, the package includes the WinTrack Document Manager and AV Image Viewer. Two options, DB Links and AV Imagizer Toolkit, are also available.

Win-Track allows users to manage image documents or other application objects and lets them create documents and scan images. They can also index, delete, search, edit, mail and print the documents, officials said. The AV Image Viewer combines the ability to view files with tiled compression, which lets users see images without decompressing them. Users can annotate image files, although they cannot modify them, with AV Image Viewer.

AV image is based on SQL and runs on Microsoft Corp. Windows-based PCs, Unix workstations with the Open Software Foundation's Motif or X Window System terminals linked to a relational database running on an Aviion-based server. AV Image supports Novell, Inc. NetWare or Transmission Control Protocol/Internet Protocol networks, with support for independent databases through the DB Link option. For environments with fewer than 20 users, AV Image supports a Borland International, Inc. Paradox database with file management located on the Aviion server.

DG will continue to work with Plexus and Recognition Equipment, Inc., as REI is a value-added reseller of DG equipment. Other third parties contributing to DG's suite of imaging products include TechGnosis, Inc. in Boca Raton, Fla., which provides the link to relational database management systems, for instance.

One Aviion customer who has signed on for the imaging products is Steve Di Pietro, chief of data management at Rhode Island Traffic Control.

"We're using it for all our projects at construction sites, for change orders and documentation and for correspondence to reduce paper," Di Pietro said. "Now we can track information rather than having to look all over for it. The product caught our eye because we could network across our mainframe to our Aviion systems."

One analyst said the move could be a good one strategically for DG but may not be without pitfalls.

While it is interesting that DG is providing an option for smaller numbers of Paradox users who are looking for a low-cost point of entry, the database is limited in terms of transaction throughput.

"How easy is it going to be to move to Sybase or Ingres? There's a desire to think that the world is simpler than it is.... And it may be harder to get these products to all work together than they think it's going to be," said Scott McCready, a principal at IDC/Avante's imaging strategies group.

AV Image is priced at $695 per client/server user. DB Link is priced at $300, and the AV Imagizer Toolkit costs $900.

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Telecommunications

Alliance eyes global shopping

By Joanie M. Wexler

Banks as a whole spent $2.1 billion in 1992 on telecommunications, according to Computer Based Solutions, Inc. The consultancy estimates that just 57 of the U.S.' 14,100 banks spent well over half of the banking industry's total technology dollars last year.

A worldwide alliance of telecommunications carriers is making significant strides toward its ambitious goal to erect a cohesive network infrastructure for delivering global one-stop shopping.

Earlier this month, a partnership of 12 carriers — dubbed the Financial Network Association (FNA) for the vertical market it will initially serve — chose Newbridge Networks, Inc. gear as its cornerstone technology. The installation of a consistent platform will facilitate the group's intent to deliver a single regional contact point for international voice, data and video service, as well as standard levels of global service, the association said.

The FNA was formed a year ago as the brainchild of MCI Communications Corp., and it just launched its network into alpha testing last month. Beta-test customers are slated to go on-line in June, with dedicated 56K/64K bit/sec. and T1 service to become available in September, said Ken Cownley, operational representative to FNA from Stentor Alliance, the Canadian FNA member carrier.

The FNA intends to initially target financial services companies because they make up one of the fastest globally expanding markets and run real-time applications that demand highly reliable facilities, said Joanne Hyland, FNA marketing chair.

"We do look for end-to-end connectivity in a vendor. That adds value, particularly in bringing new services to market quickly," said Jeff Marshall, senior managing director of communications at Bear, Stearns & Co. in New York.

"The real question, though, is what will be the [degree of] global connectivity and the price? Everything really ends up based on economics," he said.

John Wood, vice president of computer and network services at Royal Bank of Canada in Toronto, agreed. "The concept of one-stop shopping is real appealing, provided it is competitive cost- and service-wise," he said.

Royal Bank, an existing Stentor customer, will at least investigate the more far-reaching FNA "because we deal with multiple [telecommunications authorities] across the world, and we don't have experts in all those countries," Wood said.

And the prevailing protocols in different geographic areas vary, requiring protocol conversion and efforts that "make it hard to achieve cohesive end-to-end communications," he said.

Speaking from the bank-only perspective of the financial arena, Arthur Gillis, president of Computer Based Solutions, Inc. in New Orleans, predicted that "with a common infrastructure, banks would spend less money. Now, they're sloppy; they throw money away recklessly."

The vehicle by which FNA intends to deliver is the Newbridge equipment. The vendor's 3600 Mainstreet Bandwidth Managers — high-capacity multiplexers that conform to worldwide telecommunications standards — have been installed in each of the carrier members' central offices.

The FNA has named Stentor as the network control center of the global network. Stentor, which already cohesively manages nine regional phone companies in Canada, will use Newbridge network management software.

Other endeavors

Financial services is not the only industry with companies looking for cohesive network services and management serving several continents. Mast Industries, Inc. in Andover, Mass., the technology business unit of The Limited, Inc., communicates regularly with off-shore manufacturing sites and has been a member of the AT&T Asian Pacific Advisory Council for the past two years.

The purpose of the committee — and its European and South American counterparts — is to join AT&T with its worldwide customers in smoothing out round-the-world telecommunications service and management issues.

AT&T provides a single point of contact, said Ed Somol, chief information officer at Mast. However, management is not working very well right now "because we can see the first half of the circuit in this country, but [we or AT&T] may not have the leverage within the local phone company on the other side to see the circuit," he explained.

The Advisory Council is currently working with AT&T to provide "global account managers" with worldwide telecommunications expertise and contacts. These individuals would replace national representatives when companies begin requiring multinational services, Somol said.

—Joanie M. Wexler

Gary H. Anthes

Digital democracy

When Internet Society President Vinton G. Cerf was asked to testify at a congressional hearing on the Clinton administration's proposed "national information infrastructure," he sought advice from 50,000 colleagues.

He polled the Internet and got replies from 600 individuals in a dozen countries, and the replies formed the basis for 18 recommendations to lawmakers on the House Science, Space and Technology Committee.

Only time will tell whether any of the advice — which dealt with issues ranging from inter-

Anthes, *page 58*

IETF focuses on mixing TCP/IP, SNA

By Elisabeth Horwitt
COLUMBUS, OHIO

■ The recent meeting of the Internet Engineering Task Force (IETF) here saw the first steps toward the formation of IETF workgroups to figure out how to improve TCP/IP's ability to handle IBM's Systems Network Architecture (SNA) traffic.

Virtually all leading router vendors encapsulate SNA so that it can travel over Transmission Control Protocol/Internet Protocol (TCP/IP) backbones. However, such links can run into reliability, throughput and bandwidth allocation problems because TCP/IP and SNA use dissimilar methods for routing traffic across an internetworking backbone, said Cisco Systems, Inc. SNA product manager Wayne Clark.

SNA uses a connection-oriented internetworking approach that sets up an end-to-end route before sending the first packet. In contrast, TCP/IP uses a connectionless method that essentially plots the route each packet will take from one router node to the next, Clark said. Both methods have their advantages and disadvantages. For example, TCP/IP routers can change a packet's route on the fly, to avoid a link that just went down or react to changing traffic patterns, Clark said.

On the other hand, determining ahead of time the route each packet will take gives SNA internetworking devices the ability to guarantee that a packet will arrive by a given time. This is crucial for SNA, given that terminal-to-host sessions are terminated when communications are interrupted for more than a few seconds.

And unlike TCP/IP, SNA internetworking supports the ability to prioritize transmissions by type of application, ensuring, for example, that terminal-to-host sessions are not bumped off by a massive bulk file transfer.

The route of the matter

TCP/IP internetworks need the following improvements in order to handle SNA traffic effectively:

- **Route allocation** by class of service.
- **Congestion control.**
- **Ability to guarantee** transmission within a set time period.

Far from perfect

Router vendors have come up with ways to solve these problems, but there is still plenty of room for improvement, Clark said. For example, users have been complaining that prioritization schemes, which guarantee that SNA traffic gets the bandwidth it needs, can sometimes actually slow down response time, be added. This is because the schemes require

IETF, *page 67*

We've heard that someone actually paid for Microsoft e-mail.

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An unusual event is taking place in the software industry. The largest software company in the world is "selectively" giving away e-mail.

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Naturally, there's a cost. Somewhere.

Interestingly enough, a recent independent study[1] concluded that less than 10% of the cost of e-mail is the initial software investment. So before Microsoft convinces you that you're smart to make a strategic enterprise-wide decision based on 10% of the real stakes, consider what it will cost you once you've signed up.

Consider your "free" e-mail's back end. Then consider yours.

To accurately assess the other 90% of your e-mail investment, there are four key areas to consider.

First there are the back-end service costs. The design and administration tools required to run the system. The quality of these tools will impact hidden costs associated with disk storage and network bandwidth.

There are the infrastructure costs including minimum hardware configuration and platform changes.

There are connectivity costs associated with bridges and gateways to other systems.

And, of course, the people-related costs. Installation. Administration. And training.

Do the analysis yourself. Or just get some objective opinions.

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Bulletin boards

Federal agency becomes on-line broker

Gas pipeline companies required to post capacity information on electronic bulletin boards

By Mitch Betts
WASHINGTON, D.C.

The Federal Energy Regulatory Commission (FERC), which is radically restructuring the natural gas industry in hopes of fostering more competition and lower consumer prices, is counting on computer networks to make deregulation work.

In order for the free-market experiment to succeed, buyers and sellers of natural gas will need timely access to information about available pipeline capacity. So the FERC has required the gas pipeline companies to post that information on electronic bulletin boards.

In addition, the bulletin boards allow parties that want gas shipped from point A to point B to bid for unused pipeline capacity. Technically, the systems are more like an airline reservation system — in this case, reserving space in the pipeline — than a simple bulletin board.

Parties on both ends *of the pipeline are clamoring for the FERC to mandate an information systems standard*

Monopoly breakup

The industry restructuring was required last year by FERC Order No. 636, which substantially deregulates the industry and eliminates the monopoly that pipelines have enjoyed as sellers to utilities and other buyers. Instead, gas producers and buyers can deal directly with each other and then arrange for transport by the pipelines.

The FERC wants this whole new regime in place by October or November, in time for the winter heating season.

The big problem at the moment is that there is no standardization of the pipeline bulletin boards, so it is very difficult to electronically "troll" the boards to find the best deals.

Stuart Maudlin, an expert on pipeline bulletin boards and president of EnerNet Corp. in Houston, said each pipeline has developed different software packages for customers to use to access their proprietary bulletin boards. He said there are no standards for log-ons, data format or data content, so it is virtually impossible to automate the process of contacting all of the boards.

Standard search

Consequently, parties on both ends of the pipeline are clamoring for the FERC to mandate a standard for the information systems. The pipelines, however, told the FERC that their industry task force has nearly completed work on a standard for data content.

That standard will be ready in time for the winter heating season, said Mike Martin, director of IS at United Gas Pipe Line, a Houston-based subsidiary of Coch Industries, Inc. The next step will be a standard access protocol, he added.

In addition, Martin pointed out that value-added network vendors such as IBM and General Electric Information Services, a Rockville, Md.-based unit of General Electric Co., are lining up to become "aggregators" of the data from the disparate pipeline systems.

To resolve the issue of standardization, the FERC recently ordered the industry to hold a series of informal conferences to nail down the standards for terminology, common data formats and communication protocols by July 1.

The Natural Gas Supply Association, a trade group for gas producers, wants the bulletin boards to not only have capacity data but also a wide variety of market data allowing parties to electronically locate supplies, arrange shipping, confirm deliveries and make payments.

Someday, such a full-fledged electronic marketplace for the natural gas industry will develop, observers said, but it may take a decade.

For one thing, it will require the natural gas industry to adopt electronic data interchange (EDI) standards, something the industry's independent-minded players have been very slow to do.

The natural gas industry is one of the last industries to embrace EDI, and actual implementation has been negligible, witnesses told the FERC at a Feb. 26 technical conference.

In addition, the industry is in such a state of turmoil from deregulation that parties will cling to person-to-person transactions they can trust, Maudlin said.

A completely electronic marketplace will have to wait until "the earthquakes subside and natural gas becomes a well-defined, stable commodity," he added.

IETF focuses on mixing TCP/IP, SNA

CONTINUED FROM PAGE 55

that transmissions go to a higher level of the protocol stack, which carries more overhead, Clark said. Cisco is revamping its prioritization scheme to deal with this, he added.

Potentially, the IETF could provide a "neutral ground" where leading router vendors — particularly IBM and Cisco — could hammer out standardized ways of providing more effective SNA-over-TCP/IP routing, Clark said.

> The IETF could provide a 'neutral ground' for leading router vendors to work on providing standardized SNA-over-TCP IP routing

Cisco originally invited IBM to get into such discussions within the Advanced Peer-to-Peer Internetworking (APPI) Forum, which is working out ways to support IBM SNA and Advanced Peer-to-Peer Networking (APPN) devices over an existing TCP/IP backbone. However, with APPI essentially competing with APPN and IBM routing protocols such as Data Link Switching, IBM has not joined the forum.

Cisco has proposed forming an IETF working group to develop a standard for routing SNA over TCP/IP based on IBM's Data Link Switching protocol. IBM and other router vendors are now considering the proposal.

Such a rapprochement would please many users, who were frustrated by the battle of SNA-over-TCP routing protocols that the two vendors staged at the recent Interop '92 Spring [CW, March 15].

Also at the meeting, two IETF working groups were formed to develop management information bases for managing SNA devices via Simple Network Management Protocol.

Another birds-of-a-feather session discussed how to provide TCP/IP-based quality of service that would support, among other things, "guaranteed deterministic delivery" of packets. This would enable TCP/IP networks to handle video and also make them more suitable for SNA, Clark added.

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Telephone network

Local-loop competition is here

By Ellis Booker

The debate over whether competition will come to the local-loop portion of the telephone network is over. New technologies, including wireless — along with a broad-based deregulatory impulse among federal and state regulators — has settled the question.

The real question, according to a recently released study by The Insight Research Corp. in Livingston, N.J., is "how efficiently competition comes to the local loop: Will the participants cooperate through joint ventures, for example, or fiercely compete through their lawyers?"

The seven regional Bell holding companies appear to accept the inevitability of local-loop competition, Insight suggested, pointing to their efforts to reshape themselves.

State barriers fall

Just last month, for instance, Chicago-based Ameritech issued a plan to do away with its five state-level telephone companies and replace them with 11 business units organized around customer markets and technologies.

A 12th unit will provide switching and transmission facilities to the other units and, presumably, to future competitors in the local loop.

But as the Insight study makes plain, there is no consensus among the regional companies as to the best way to position for local-loop competition.

Some are considering a strategy to split themselves into regulated and nonregulated halves, with the regulated entity providing basic transmission and switching facilities to all local-loop service providers.

In the works

Others may spin off major subsidiaries in hopes of being able to offer new kinds of services that in some cases are now closed to telephone companies. Pacific Telesis Group did this with its $1 billion cellular operation.

Yet another strategy, Insight said, is to extend cost-based pricing to all local-loop services and isolate services that are in the public interest. In this way, the cost of universal telephone service would be borne by all competitors in the loop.

According to Insight, these reorganizations are being driven by a handful of local-loop opportunities, including digital cellular radio, personal communications systems, interactive TV and video dial tone.

Insight predicted that these new services will grow 10.9% between now and 1998 compared with just 3% for traditional telephony services.

At a glance

According to Insight, a confluence of five trends is forcing competition among the telephone, computer and entertainment industries:

- Ubiquitous fiber-optic cable for low-cost wideband data services. By 1998, Insight predicted, new video services, beginning with video dialtone, will be brought directly into the home and office.
- Deregulation of the telephone industry.
- Advances in semiconductor technology, yielding new portable communication devices.
- Cable systems with 500+ channels, creating new markets and services.
- Personal wireless communicators, bringing interactive and information services to millions of new users and creating markets.

In Brief

Internet navigation

Services to allow Internet users to better navigate their way around the sprawling network's resources recently emerged from AT&T in the form of free on-line directories and databases. The AT&T services are a component of InterNIC, a three-organization team providing network services to Internet, NSFnet and National Research and Education Network users. In addition to AT&T, InterNIC, announced last week, includes Network Solutions, Inc., which provides registration services, and General Atomics/CERFNet, which provides information services.

Ericsson to resell Cisco routers

Telecommunications supplier Ericsson, Inc. will resell Cisco Systems, Inc.'s complete line of routers, as well as other Cisco internetworking products and software, in countries around the world.

NCD, Brixton Systems join forces

X Window System vendor Network Computing Devices, Inc. (NCD) in Mountain View, Calif., recently teamed with client/server migration software developer Brixton Systems, Inc. in Cambridge, Mass., to provide IBM 3270 emulation capabilities on NCD's X terminals and PC X server software.

Fore Systems ships T3 interface

Fore Systems, Inc. in Pittsburgh said the T3 interface module for its line of Asynchronous Transfer Mode local-area network switches is now shipping. The $14,900 module will allow users to link their ATM switches over T3 (45M bit/sec.) telecommunications lines.

Video channel technology coming

BroadBand Technologies, Inc. in Research Triangle Park, N.C., said at recent federal hearings on the nation's "information superhighway" that it will deliver to the phone companies in late 1994 technology that will allow them to deliver 1,500 interactive video channels for less than $500 per customer.

Xerox resells Chipcom hubs

Xerox Corp. is now reselling Chipcom Corp. intelligent wiring hubs throughout the U.S.

USAir taps phone/data supplier

USAir has chosen Oak Brook, Ill.-based In-Flight Phone Corp. to equip up to 402 aircraft with digital air-to-ground telephone and data services by year-end 1994.

Anthes

CONTINUED FROM PAGE 55

national trade policy to network protocols to rural U.S. libraries — will be heeded on Capitol Hill. But the process Cerf employed to prepare for the hearing is an extraordinary example of digital democracy — an electronic town meeting on a global scale.

Cerf sent an electronic-mail message to "Internauts and friends" on several distribution lists. A number of those receiving the message forwarded it to people on still other lists. Cerf said it is impossible to know how many on the 5 million-user Internet saw his message.

On their minds

Among the replies were the following:

- A student at the Thomas Jefferson High School for Science and Technology in Alexandria, Va., complained that there is much talk but little action on bringing national data network connections to schools.
- A U.S. military person in Somalia suggested the U.S. should leave its communication equipment, which is used to connect to the Internet, behind when it departs the country.

In a similar vein, Nobel Prize laureate Joshua Lederberg noted, "You may feel like you are in a flood [of information], but people in the Third World are in a real drought."

- In a distinctly minority view, someone asserted, "The telecommunications and information infrastructure is much too important to be left up to normal market mechanisms. We never would have had the highway system, much less the Internet, if we had relied solely on the marketplace."
- But for the majority, another said, "The government should keep its nose out of the private sector. There's nothing wrong with technology development or information infrastructure that government meddling won't make worse."

> "The government should keep its nose out of the private sector. There's nothing wrong with technology development or information infrastructure that government meddling won't make worse."
>
> — *Internet user*

Cerf said it took him just a few minutes to get his message out. The replies came in over four days, and it took him another 48 hours to read, digest and synthesize them in preparation for his testimony. He printed them all on paper to facilitate flipping back and forth among them, something he said technology cannot yet deal with effectively.

But, on balance, technology shone in this case. It is not simply that getting input from such a diverse user community would have been more difficult any other way; had Cerf been forced to rely on voice telephone or snail mail, the job would not have gotten done.

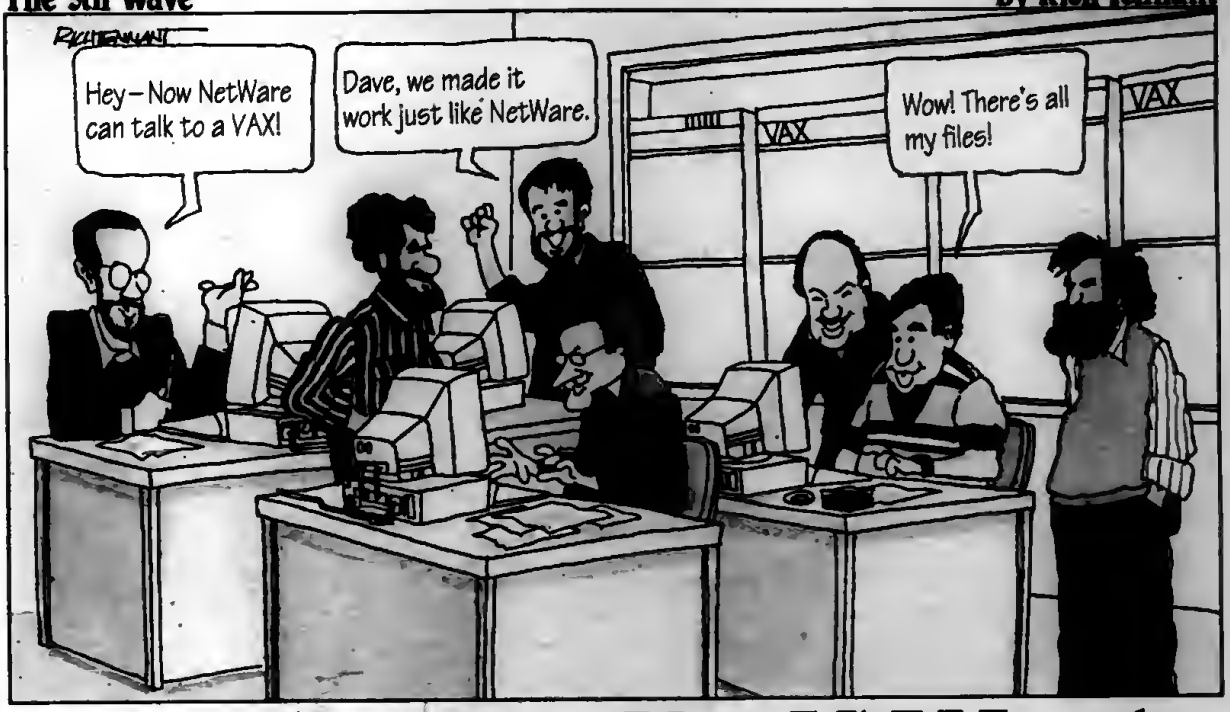
In his testimony, Cerf said an "infrastructure" is characterized by "ubiquity, expandable capacity, simplicity of use, applicability to many uses and broad affordability." That's what was so elegantly illustrated in this case and what is unique and wonderful about the Internet.

Here is a summary of Cerf's recommendations to Uncle Sam, by way of the Internet.

- Invest in the development of precompetitive information technology and standards.
- Ease restrictions on the export of encryption technology.
- Make Transmission Control Protocol/Internet Protocol coequal with Open Systems Interconnect in the Government Open Systems Interconnect Profile specifications.
- Support connection of libraries and museums to the Internet.
- Set up programs to train secondary schoolteachers in information technology. Foster the development of educational software.
- Mandate on-line access to government information; allow the private sectors to add value and resell it. Make all federal agencies accessible to the public via E-mail.
- Foster programs to support telecommuting and shared scientific databases.
- Encourage the deployment of Integrated Services Digital Network-based services.
- Avoid the creation of gaps between the information rich and poor.
- Do not subsidize network service providers; subsidize users where appropriate.
- Find a way to make advertising permissible and useful in the national information infrastructure.

Anthes is *Computerworld*'s Washington, D.C., senior correspondent.

The 5th Wave **By Rich Tennant**



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Product Evaluation

NetWare 4.0: Requires a lot of planning, but users say it's worth it for the enterprise management gains

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

Novell NetWare 4.0

- NetWare 4.0 is an enterprise-oriented network operating system that departs from the single-server orientations of Versions 2.X and 3.X. As such, NetWare 4.0 requires a high level of preliminary systems planning.
- Evaluators were confident that NetWare 4.0 would allow them to consolidate and rationalize network administration tasks, ultimately reducing costs.
- Evaluators said NetWare 4.0 answers the need for enterprise networking. "The term 'local-area network' is now history," one evaluator said.

Facts about NetWare 4.0

- NetWare Directory Services provides single-site management of multiple servers.
- Integrated network administration utilities.
- Built-in file and data compression.
- Embedded support for CD-ROM and optical storage.

After more than a year of anticipation, Novell, Inc. last month released its first major upgrade to NetWare, the undisputed standard in LAN operating systems.

NetWare 4.0, which underwent nearly a year of beta testing at corporate sites, is perhaps the biggest upgrade to the operating system since v3.11, which was released in February 1990. The reason? NetWare 4.0 extends the coverage of the network operating system from departmental and company-wide systems to the wider and more complex scale of enterprise networking.

For this evaluation of NetWare 4.0, *Computerworld* interviewed four information systems managers charged with testing and implementing Netware 4.0 throughout their eoterprises. Prototypical users of the oetwork operating system, these evaluators collectively manage nearly 37,000 NetWare oodes at more than 160 sites. Over time, they will oversee the deployment of NetWare 4.0 oo aboot 1,000 servers.

But deployment will not come quickly. Despite the benefits that NetWare 4.0 offers to enterprise oetworking, these managers said the overhead of planning and implementing the network operating system is far more complex than a single-server installation and requires a substantial conceptual departure from NetWare's "bindery" concept of allocating network resources. Replacing it will he the hierarchical, enterprisewide NetWare Directory Services (NDS), the heart of NetWare 4.0.

All of this structural reorganizatioo will take a great deal of time and planning, the evaluators said, especially at deceotralized companies with large numbers of 2.X and 3.X servers.

This evaluatioo was conducted in mid-March. All the evaluators said they were working with the fioal best-test versioo of NetWare 4.0. The evaluators were drawn from the *Computerworld* product evaluation council. The survey was developed with Howard Rubin Associates and Technology investment Strategies Corp.

Installation descriptions for users who evaluated Novell's NetWare 4.0

	Insurance Cost Management	Banking	Hospital	Accounting
Platforms	Compaq SystemPro, ProSignia, DeskPro	IBM Model 95, Compaq SystemPro	Compaq SystemPro, AST Manhattan, Everex	Dell, Compaq ProSignia
Installed since:	Sept. 92	Oct. 92	July 1992	Oct. 92
NetWare 3.x users	1,200	7,000	4,700	25,000
Upgrades to 4.0 in 1993*	Unknown	5%	100%	40%
Total NetWare servers	24	600	86	200
Total NetWare sites	3	12	3	150

*Percent of NetWare 3.x users

Reliability

The evaluators said NetWare 4.0 has been stahle since the October release of the heta-test version. With a variety of testbed environmeots, evaluators said there were no significant problems with the later beta-test versions of NetWare 4.0.

Accounting firm: "There were oo failures that were show-stoppers."

Banking firm: "As we reported problems [with the beta-test version], they were cleared up very quickly."

Performance

Eveo with the additioo of a new directory structure and real-time file compression, evaluators said NetWare 4.0 ran at about the same speed as v3.11. One evaluater reported that the initial log-oo process was a bit slower, hut applications ran at approximately the same speed on equivalent oetwork servers.

Accounting firm: "It doesn't make sense to compare it to anything but itself because it's a whole new ball game."

Hospital: "We tested performance the old-fashioned way: a 3.11 server next to a 4.0 server. It took [NetWare 4.0] 20% less time to invoke the same application."

Insurance firm: "Better performance may be masked by the overhead [of oew features]."

Banking firm: "We expected it to be slower than 3.11 io log-ons and because of the data eocryptioo. There are things being dooe in the background that aren't dooe in 3.11."

Support

NetWare 4.0 beta-test users were provided with unusually rich support by Novell: Each was given access to a single Novell engineer to handle technical questions and problems. For typical NetWare 4.0 users, new on-line documentation and better technical manuals should answer many questions.

Accounting firm: "They sent out the NetWare 4.0 architecture manuals, which contain everything

NetWare 4.0, *page 62*

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Product Evaluation

Users say NetWare 4.0 would allow them to consolidate and rationalize network administration

CONTINUED FROM PAGE 60

you never wanted to know about NetWare. It's mind-boggling what they do with this operating system."

Costs

Coincident with the release of NetWare 4.0 is the launch of Novell's Master License Agreement (MLA), which provides single-node rather then server-based NetWare pricing. Evaluators said this will help them administer the costs of a Novell network and provide better chargeback tracking.

Regarding NetWare 4.0 itself, they said support, hardware and administration costs could drop because of the consolidation of resources provided by the new network operating system. Evaluators said they expect short-term transition costs for planning, training and conversion.

Accounting firm: "We'll have to take a look at our equipment and its layout and rethink our administration. Long term, we won't be managing multiple servers anymore."

Hospital: "It's much easier to administer and definitely cheaper."

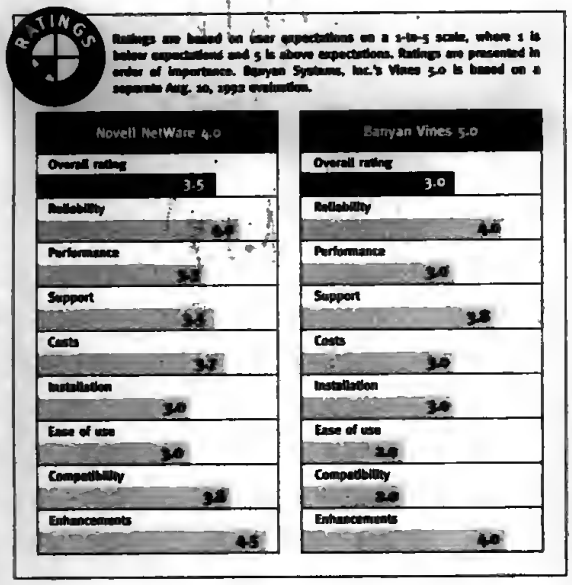
Insurance firm: "Once you're past the learning curve, there's no additional cost."

Banking firm: "The MLA allows you to add as many servers as you want. You pay an entry fee to add a workstation to the enterprise."

Installation

Installing NetWare 4.0 is a two-step process. The easiest step is the installation of the network operating system to network servers. None of the evaluators reported significant difficulty here, and they praised Novell's decision to make the upgrade available on CD-ROM (especially given the 25M bytes of on-line technical documentation included).

However, NetWare 4.0 will also impose significant planning overhead on network administrators. Evaluators said the improvement in network configuration was worth the effort, but administrators should allocate from two weeks to four months for conceptual planning of the revised network architecture.


RATINGS
Ratings are based on user expectations on a 1-to-5 scale, where 1 is below expectations and 5 is above expectations. Ratings are presented in order of importance. Banyan Systems, Inc.'s Vines 5.0 is based on a separate Aug. 10, 1992 evaluation.
Novell NetWare 4.0
Overall rating 3.5
Reliability 4.5
Performance 3.5
Support 3.5
Costs 3.5
Installation 3.0
Ease of use 3.0
Compatibility 3.5
Enhancements 4.5
Banyan Vines 5.0
Overall rating 3.0
Reliability 4.0
Performance 3.0
Support 3.5
Costs 3.0
Installation 3.0
Ease of use 2.0
Compatibility 2.0
Enhancements 4.0

Accounting firm: "It took a about a week to read the documentation and two days to come up with a directory structure."

Insurance firm: "The first installation went poorly until I understood the planning tree and knew the type of units I wanted."

Banking: "Planning will take at least two months. The more decentralized the organization, the bigger the nightmare."

Ease of use

The evaluators said administrators will face a short-term learning curve to understand the new consolidated NetWare 4.0 utilities and the new NDS architecture. They were divided on the impact of these new features on end users.

Accounting firm: "It's easier to use once you know the nuts and bolts of it."

Insurance firm: "The new features add complexity and a new learning curve."

Banking firm: "It's much easier to administer once you make the paradigm shift from the single server to the directory service."

Compatibility

No compatibility problems were reported for off-the-shelf programs. However, some in-house and NetWare-specific applications that directly use NetWare 3.X bindery services will have to be rewritten. Some third-party utility programs will either be replaced by new NetWare 4.0 utilities or will have to be rewritten to accommodate NDS.

Hospital: "Off-the-shelf applications are ignorant of the change [to NetWare 4.0]."

Insurance firm: "Some of our internal applications will require adjustment."

Banking firm: "All of our [NetWare v3.11] in-house applications will have to be recompiled because the [NetWare 4.0] bindery emulation doesn't cut it."

Enhancements

All evaluators ranked NetWare Directory Services as the most valued enhancement in NetWare 4.0. Indeed, NDS and its "object-oriented" architecture are the primary reasons that the evaluators will move to the new network operating system. Other valued features are data compression and encryption, centralized and integrated administration utilities, on-line documentation and a new graphical interface.

Hospital: "We'll be using the document imaging hooks for a gigabyte per day of patient care forms."

Insurance firm: "A lot of third-party utilities have been replaced, which can only be an improvement."

Banking firm: "We're getting killed [with administration] right now, and this will cost us less."

Written and compiled by senior editor Garry Ray.

COMPUTERWORLD PRODUCT EVALUATION COUNCIL

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- Sprint Corp.
- Tribune Broadcasting
- Unum Life Insurance Co.
- Wilton Industries
- Worldcorp

Novell responds

Bob Young, Novell's vice president of marketing, responded to some of the issues raised in this evaluation:

Recommended upgrades: Companies with more than 10 servers, depending on configuration and use, should migrate to NetWare 4.0. People who are using NetWare 3.X today should continue to use it if it is meeting their needs. We will continue to enhance Version 3.X.

Technical support for network planning: We spent a lot of time and energy preparing for this product. We have resellers that we believe are very good in handling this type of technology. We also have Alliance Partners who are experts in this type of solution. We believe the support infrastructure is in place.

Migration: From a technical standpoint, migration is very simple. We have the technology in place to make it easy. The second issue is organizational in nature. An enterprise network requires a lot of planning. Groups and departments will have to cooperate and work on these issues.

Bindery emulation: Companies whose in-house applications use bindery services and demand high performance should upgrade those sections of the code that use the bindery. They should instead use NetWare 4.0 directory services.

Users seen winning from merger

Sterling Software, Systems Center team up to strengthen complementary products

By Gary H. Anthes

When the acquisition of Systems Center, Inc. by Sterling Software, Inc. becomes final this summer, customers are likely to see a stronger, broader array of products for storage management and data transfer, including electronic data interchange (EDI), according to analysts and the companies' chief executive officers.

Two weeks ago, the companies said they will join to form the third largest independent systems managemeot software company, with annnal sales of $390 million.

"There is a great deal of synergy between [Systems Center's] VM business and our storage management business," said Sterling L. Williams, president and CEO of Sterling Software. "We [offer] storage management products for MVS. They cover the other niche [VM] that we have long avoided."

Williams said an even better fit is between Systems Center's Network Data Mover for data transfer among disparate environments and Sterling Software's SuperTraes product for data communications. He said the Sterling Software offering is "more powerful and versatile" for intercompany data moves, while Systems Center's product holds the edge for intracompany transfers. "I can see us going forward with multiple versions of a single, powerful file transfer prodnct," Williams said.

Sterling connections

▶ One-third of Sterling Software's revenue comes from professional services for the federal government, especially for NASA and the U.S. Department of Defense. Sterling Software said that know-how will boost government sales of Systems Center's products when Sterling Software acquires the company.

He also said Systems Center's Advanced Systems Management line of systems and network management products — for things such as console management and configuration management — extends Sterling Software's product line into areas the company had planned to go into anyway.

Hard times

Bruce Allen, vice president of services and systems management strategies at Meta Group, Inc. in Westport, Coan., cited a recent history of financial difficulties at Systems Center and said the merger is "extremely good news for both Systems Center and its customers." Of Sterling Software, he said, "Now they have more of a critical mass in terms of annual revenoes to compete against Legeot and [Computer Associates international, Inc.] in the overall systems management game."

Systems Center Chairman Robert E. Cook, who will join the Sterling Software board of directors, acknowledged that added funds from the Sterling Software side of the ledger would enable Systems Center to speed the development of its products for problem management, change management and configuration management.

Williams said more acquisitions are likely, particularly in EDI, which the company is trying to expand into a broad business in "electronic commerce."

But Williams said the firm confronts a paradox as it evaluates acquisitions. "Users want to deal with fewer vendors and fewer contracts on the one hand. But we're running into customers who feel they've been victimized by past consolidations in the industry."

Despite the strengths both parties bring to the marriage, the new Sterling Software has its work cut out for it, Allen said.

"They are now in the top tier in terms of revenues, but they are still niche-orieoted. They are out of touch with distributed systems management, with standards and with having a commou architecture underlying all their products," he added.

Tough team

The combination of Sterling Software and Systems Center could create a potent force.

Sterling Software, Dallas
sppa sales: $259 million.
sppa profits: $13.8 million.
Employees: 2,246.
Major product lines: EDI, storage management, applications development, information management, data communications.

Systems Center, Reston, Va.
sppa sales: $133 million.
sppa profits: $5.8 million.
Employees: 900.
Major product lines: Systems and network management, VM operating system utilities and software distribution.

Re-engineering plan preserves mainframe role

By Rosemary Cafasso
ALBANY, N.Y.

In 1991, Key Corp., a $23 billion bank holding company, launched a corporate re-engineering effort dubbed Vision 2001 and targeted its loan processing operation as a top priority.

With good reason. The company had been relying on a mix of outdated host-based applications and manual procedures to handle its loan processing operation. According to Jay Ward, Key's chief information officer, the approach "wouldn't meet the goals we had for going into the future."

Today, Key staffers are up to their eyeballs in the loan operation overhaul. Pilots on five major applications are concluding, and Key is ready for the implementation phase, said Michael Quinn, a project manager for Vision 2001.

Ward would not reveal the actual cost of the project, other than to say "it's millions of dollars." He said he expects it to be completed in mid-1994.

Both Ward and Quinn said the loan project is a success so far because of common sense and practical decisions when it came to new technology.

For starters, the firm populated the project team with users. Quinn comes from the user side, having spent 23 years in the commercial and consumer loan business. "You need to bring the end user into the development process as early as possible," he said. "You need to listen to what they tell you about how they perceive what they are getting, and you need to respond to that."

Second, Key elected to keep its mainframe platform in a central role. While the team was interested in a client/server architecture, it decided that its mainframe provided the security and integrity that is essential to loan processing. In addition, keeping the existing platform would be less expensive and less risky.

"Everything we do involves a mainframe because we have to use

Key, *page 68*

Marcam sculpts new architecture

By Johanna Ambrosio

Playing to the growing audience of large users with multiple IBM Application System/400s, Marcam Corp. has announced a new enterprise-oriented architecture for its Prism family of financial and manufacturing software.

At the heart of this distributed architecture is the Enterprise Manager, which is essentially a communications facilitator. It lets applications collect and disseminate data from multiple AS/400s in a corporation, Marcam said.

The first Marcam applicafion to adopt Enterprise Manager is Customer Order Management (COM). The new version of COM allows users to receive and process orders at a central locatioo and then distribute information to different plants and other facilities.

HULS America, a Piscataway, N.J., manufacturer of chemicals and plastics, is an early adopter of Enterprise Manager and Enterprise COM. "We have a nnmber of plants throughout the U.S., and we wanted to customize to each plant's requiremeots without losing the enterprisewide view of data," said Fred Straughn, general manager of information services.

In-house didn't cut it

HULS America is downsizing from a mainframe to an AS/400 and swapping from an in-house-developed system to Marcam packages. "The homegrown system didn't meet our business requirements," Straughn said. "We wouldn't have bought Enterprise COM without these [new] capabilities."

Eventually, he said, HULS America will move some processing out to the plants. But during the initial implementation, "we didn't want to change too much at the plant level."

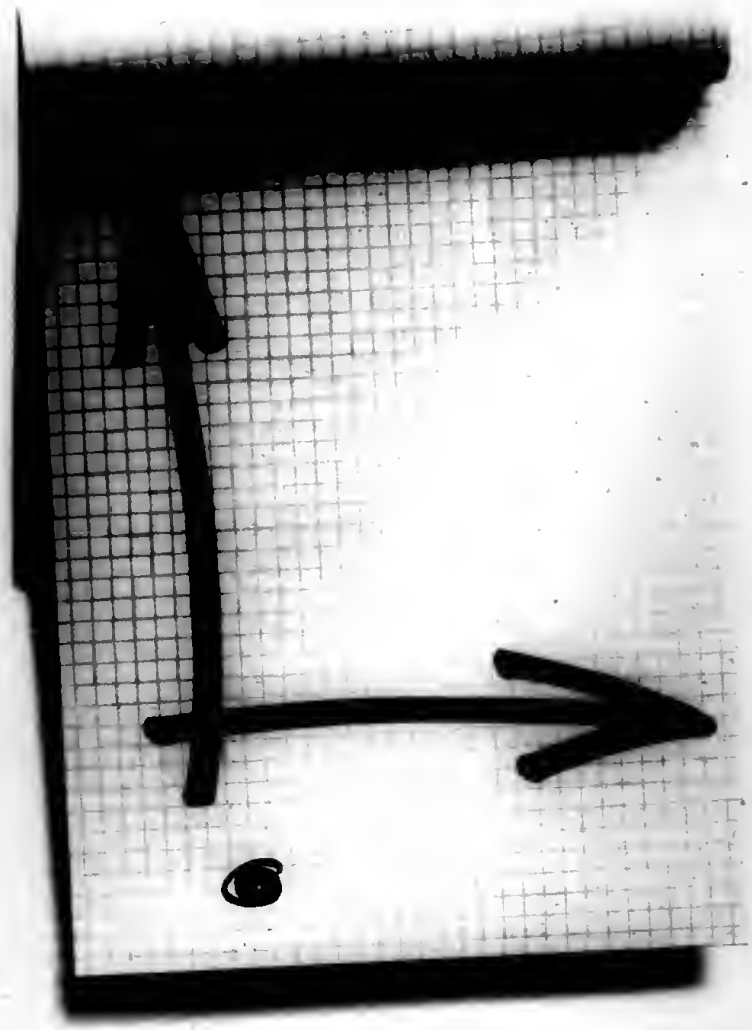
Tom Ebling, senior vice president of development and support at Marcam in Newton, Mass., said that with Enterprise COM, a customer with multiple AS/400s will have increased flexibility over what was available before.

"You could take an order in Philadelphia for a plant in Los Angeles, and the application will pass the informatioo over to Los Angeles without anyone having to intervene," he said. "Before, someone would have to know which AS/400 had the information."

Enterprise Manager and Enterprise COM will be available in September. Prices for Enterprise Manager start at $16,000, based on the size of the processor and the number of machines in the network. Enterprise COM is an upgrade provided free to current osers.

Ebling said the next modules to incorporate Enterprise COM will be reporting software and an interplant ordering package. With the reporting module, users can gather information from across the network and print it centrally or distribute it electronically. The interplant ordering software, Ebling said, will allow plants within one company to order parts from one another.

Ebling declined to provide availability dates.



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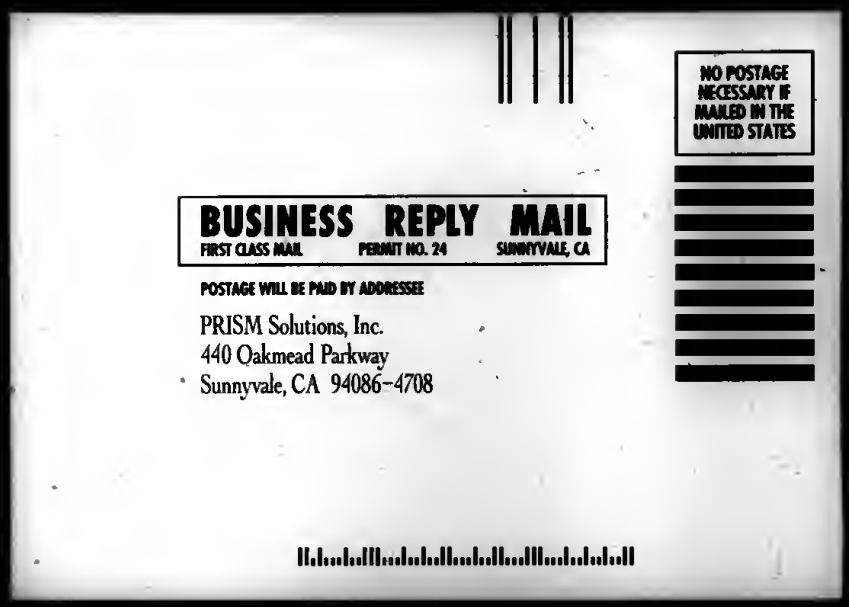
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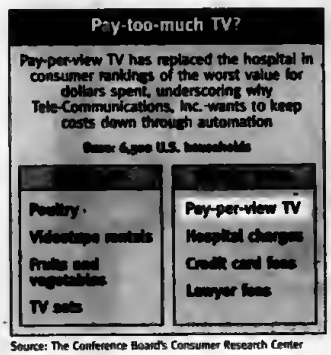
Transaction processing

Cable TV orchestrates pay-per-view

By Mitch Betts
DENVER

Whether it is WrestleMania, the Olympics or a movie, people sign up for pay-per-view cable television events at the very last minute. That kind of impulse buying requires a speedy transaction-processing system, especially because cable companies are planning to offer hundreds of channels in the near future.

Tele-Communications, Inc., the largest cable TV conglomerate in the world, has decided to handle this challenge by installing command-and-control software that can process 180 pay-per-view transactions per second on a sustained basis, said Terry Wolf, director of addressable technologies. "To the best of our knowledge, this is the largest simplex, or one-way, network in the world," Wolf said.


Pay-too-much TV?
Pay-per-view TV has replaced the hospital in consumer rankings of the worst value for dollars spent, underscoring why Tele-Communications, Inc. wants to keep costs down through automation
Poultry
Videotape rentals
Fruits and vegetables
TV sets
Pay-per-view TV
Hospital charges
Credit card fees
Lawyer fees
Source: The Conference Board's Consumer Research Center

The custom software was developed by Probita, Inc., a small software house in Boulder, Colo., that specializes in real-time, peak-load transaction processing. The core of the software developed for Tele-Communications is a "main memory-resident" database running on a cluster of Digital Equipment Corp. VAXs.

A memory-resident database is especially lean and fast — somewhat like a memory-resident program on a PC — in part because there is no waiting for the platters in disk drives to spin, explained Donald V. Burt, president of Probita.

For Tele-Communications, the software controls the delivery of more than 60 events daily to about 300 cable systems from a central data center outside Denver. When a program is purchased, the software sends a command to the customer's set-top converter to descramble the signal.

Previously, these transactions were handled on PCs at the local cable systems, but Tele-Communications has decided to centralize the increasingly complicated task of orchestrating the pay-per-view offerings, Wolf said.

A key reason for the central command-and-control architecture is the coming explosion in cable TV offerings. Tele-Communications recently announced it will begin rolling ont "compressed digital video and data services" next year, which will permit as many as 500 channels of TV and data services.

Another reason for centralization is that it "allows us to more economically deliver and manage our pay-per-view programming," Wolf said, which may put downward pressure on consumer prices.

Customers will still call their local cable office to order pay-per-view programs because local managers decide which of Tele-Communications' pay-per-view programs they will carry.

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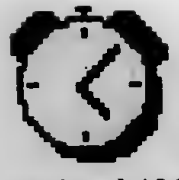

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Low-cost imaging abounds at AIIM

Association learning to accommodate industry change

By Ellis Booker

The document imaging industry's major event, the annual Association for Information and Image Management (AIIM) show, took over Chicago's largest venue last week and once again set attendance and new product introduction records.

But some observers said they believe the 50-year-old trade association, which claims more than 650 corporate and 8,000 individual members, is at a crossroads. Specifically, they said that for AIIM to remain relevant, it must decide how to accommodate the pace of change in the imaging market, especially now that standardized, low-cost hardware platforms have paved the way for a plethora of suppliers offering low-cost PC and local-area network-based systems.

As one analyst put it: "AIIM historically isn't used to the jolt and pace of change in the computer industry, which is very different from its records management tradition."

A secondary challenge for AIIM is how to embrace and educate users about work flow. Work-flow software, generically understood as systems that automate the routing of image documents between individuals and applications, has become a key software component in imaging, with vendors racing to provide more sophisticated work-flow systems capable of modeling a range of business processes.

Imaging and work flow

Setting the standard for low-cost imaging was Watermark Software, Inc. in Burlington, Mass., with its $149 Microsoft Corp. Windows-based document management system. Watermark uses the Object Linking and Embedding (OLE) feature of Windows to append Image Objects (received from a scanner or though a fax card) to other applications or electronic-mail messages. Watermark can embed Image Objects in any Windows program that is an OLE client.

Available in the second quarter, Watermark's basic software will sell for $149. An enhanced program, called Watermark Professional, will sell for $395 in the third quarter. Watermark also promised image server and optical storage support later this year.

In the past two months, Watermark has established several high-level partnerships. Last month, it became a Novell, Inc. development partner for image-enabled NetWare; in February, it announced alliances with Borland International, Inc. and Beyond, Inc. to integrate image objects into Borland's Paradox for Windows and BeyondMail.

FileNet Corp. in Costa Mesa, Calif., announced plans for Visual WorkFlo, an object-oriented application development environment for modeling and automating business processes. The first components will be commercially available in first-quarter 1994.

Blueridge Technologies, Inc. in Flint Hill, Va., announced what it called the first work-flow system for the Apple Computer, Inc. Macintosh. A new module for Blueridge's Optix Network imaging product for the Macintosh, Optix WorkFlow, will be available this month with a starting price of $40,000.

Bell+Howell Document Management Products Co. in Chicago showed a Windows version of its Image Search imaging system.

Digital Equipment Corp. extended its DECimage product with a Unix server. The new DECimage Megadoc VI software supports Unix servers running The Santa Cruz Operation's Unix and supports Windows clients. An optional "foldering" application can manage images, ASCII text and annotated text.

Pricing for Megadoc client software starts at $4,975, or $8,500 for clients with the foldering application; server software starts at $4,200.

DEC also upgraded its DECimage Express software for OpenVMS servers, adding support for Windows clients and an improved interface for DECwindows users and color images.

New features

Sigma Imaging Systems, Inc., which is based in New York, added a high-volume rasterized computer output capability to its OmniDesk imaging system. The OmniDesk Rasterized Image Output (RIO) server allows up to 100,000 pages per night of mainframe-generated Metacode and AFP print streams to be downloaded and converted to rasterized image documents, stored and indexed in the OmniDesk system. Sigma also announced a new release of OmniDesk.

LaserData, Inc. in Tyngsboro, Mass., unveiled GronpFile for Windows, a PC-based software for building multiformat document management applications in a Windows environment.

Adaptive Information Systems in Laguna Hills, Calif., introduced the AdaptFile 5000 series. The product uses OS/2 at the network level and offers a choice of either Windows, OS/2 Presentation Manager or DOS workstations.

Lanier Worldwide, Inc. in Atlanta added SQL database support to Version 4.0 of its PC-based imaging product, Informatioo Management System 2020.

Peripherals

Cygnet Systems, Inc. announced what it called the first 12-in. optical-disc jukeboxes able to directly interface Novell's NetWare 4.0.

U.S. Design in Columbia, Md., announced the first member of its Turbo Mass family of optical storage accelerators and storage systems using a superscalar reduced instruction set computing-based controller designed for high-speed, multithreaded I/O control.

Key banks re-engineer

CONTINUED FROM PAGE 63

it," said Ward. "We haven't found a way around that yet."

Quinn said Key is "still comfortable with our ability to operate successfully in the environment we are in. The issues of control and security suggest that there is still a lot of value in the mainframe environment."

Third, Key did not consider in-house development to create the new loan processing applications because it would have been too costly and time-consuming. Ward said Key has a long history of selecting off-the-shelf applications because, typically, that is the cheaper route.

Finally, Key is delivering ease-of-use features to users for those pieces of the loan processing system that require user interaction. For example, an interface was designed to link the new loan origination program with an existing branch automation system, Quinn said. The branch automation system uses PCs and local-area networks that are linked to a host application. The interface allows staff members to work with a PC as the gateway to the loan origination system.

High hopes

Ward and the Vision 2001 crew are counting on big benefits from the project, including overall user productivity boosts of 20%. But Ward said he expects the real change to occur in customer relations, and he is predicting a 50% improvement in customer service processes. The loan origination system, for example, will replace a manual process that included filling out loan application forms and contacting credit bureaus.

In addition, loan processing applications will be standard across Key, which comprises 10 banks and approximately 850 branches. Key has a history of acquisitions, and the banks it acquired did not share the same software.

With the new system, "we can more quickly change policies or revise products" across the company, Quinn said.

New software lineup

Consumer loan origination system from American Management Systems, Inc. (AMS) replaces manual system.

Consumer loan processing from AMS replaces 15-year-old application.

Commercial loan processing from Automated Financial Systems, Inc. replaces 15-year-old application.

Recovery Management System from Stockholder Systems, Inc. tracks progress on charged-off loans and replaces manual system.

Student Loan System from Charter Account Systems, Inc. had been used by one Key bank and will be extended to entire company.

In Brief

Mutual satisfaction

Management Information Technology, Inc. has reached an agreement with **Sybase, Inc.** to port Sybase's SQR report writer product to **Oracle Corp.**'s Oracle 7 database. Sybase said last month that it was unable to obtain an Oracle 7 license from Oracle, its database rival. Management Information Technology is an Oracle value-added reseller. The SQR product works with databases from Oracle, Sybase, **Informix Software, Inc.** and **The ASK Group, Inc.**

Exchange gives Tips

The Coffee, Sugar & Cocoa Exchange, Inc. (CSCE) and the **New York Futures Exchange** (NYFE) are negotiating an agreement that would let the NYFE use CSCE's Trade Input Processing System (Tips) to process its trades. The NYFE board of directors accepted the proposal earlier this month, and the two exchanges are now formalizing operational specs and systems enhancements. CSCE's Tips lets trading floor brokers and clearing members input trade data directly to an on-line trade matching process. NYFE is expected to begin trade input with Tips by the fourth quarter of this year.

Building contacts

SHL Systemhouse, Inc. said it won a $7 million systems integration contract from the City of Los Angeles to develop and implement a client/server system design to help with issuing permits and monitoring inspections.

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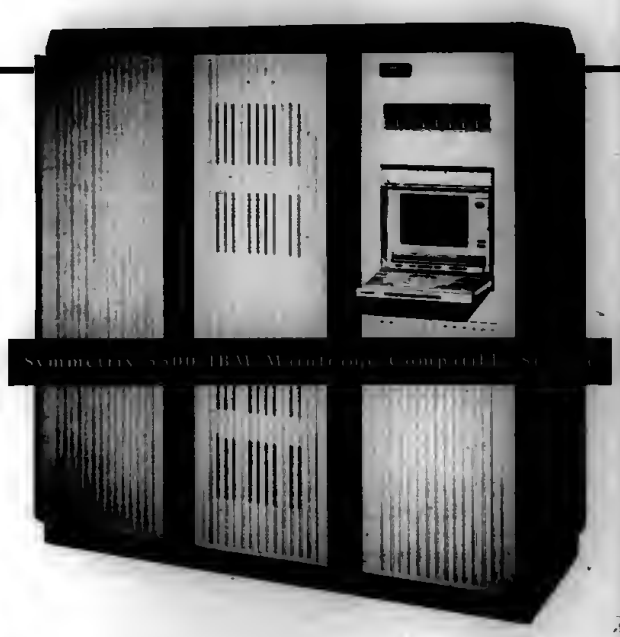

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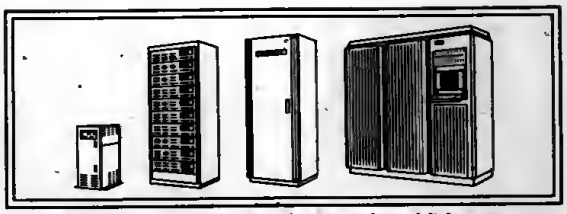

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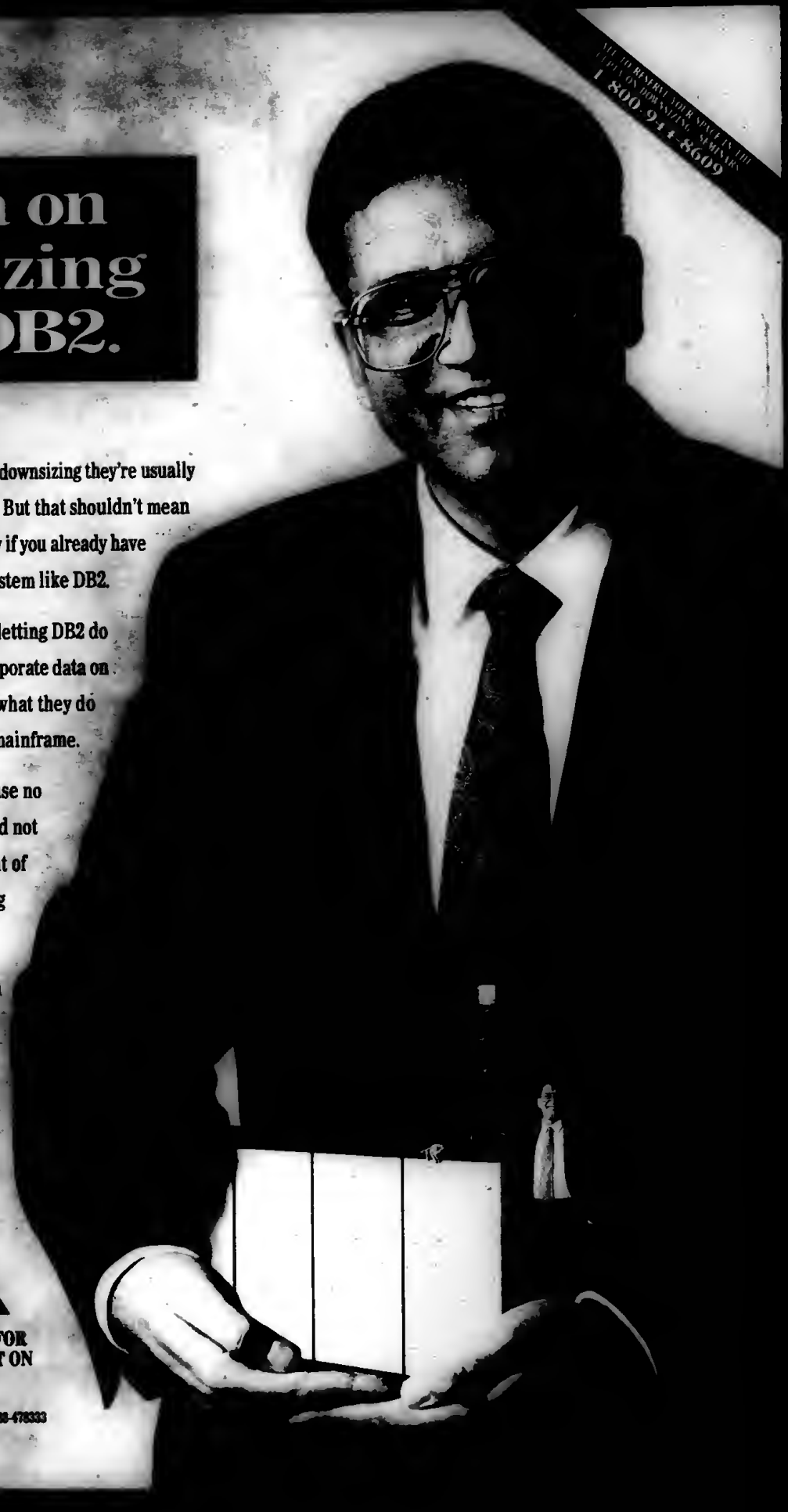
Gupta on downsizing with DB2.



These days when people talk about downsizing they're usually talking about client-server and PCs. But that shouldn't mean throwing out mainframes. Particularly if you already have a powerful transaction processing system like DB2.

What downsizing really means is letting DB2 do what it does best: manage central corporate data on the mainframe. And letting PCs do what they do best: off-load applications from the mainframe.

Gupta was founded in 1984 because no leading DBMS company, not then and not now, understood the full complement of products needed to make downsizing with client-server a reality.

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Tool tackles database download bottleneck

Trinzic's InfoPump simplifies data migration

By Gary H. Anthes

The biggest challenge of downsizing is sometimes simply getting the data off the mainframe and onto the workstation. Trinzic Corp. in Palo Alto, Calif., has a solution that customers say can take much of the pain out of that process.

InfoPump, sold by Channel Computing, Inc. before Channel was acquired by Trinzic recently, is a middleware product that shields application developers, operations staff and end users from many of the complexities of moving data across dissimilar environments. It automatically schedules data transfers and processes the data as it is pumped by. It also includes tools that speed the development of distributed applications (see chart).

In the design
InfoPump was designed for sharing data across dissimilar environments, staging data for decision support, monitoring time-sensitive applications and integrating, downloading and uploading data.

International Flavors & Fragrances, Inc. in New York has InfoPump on a dedicated server to move product and customer data every night from flat files on an IBM 3090 mainframe to 10 servers on local-area networks in New York, New Jersey and Chicago. As it is pumped, the data is summarized, filtered and tailored for decision support by users at each individual site, said Lou Seigal, manager of distributed systems.

The company also uses InfoPump weekly to update databases on laptop computers used by mobile executives and salespeople. Both detailed operational data and summarized decision-support data are loaded, Seigal said.

He said end users had no good way to get at data before InfoPump was installed. "This is a godsend for us; to [develop it] ourselves would have taken a couple of man-years of effort," he said. "The users don't see it, but for the people supporting these systems, it provides tremendous relief."

Corporate Software, Inc., a Canton, Mass., value-added reseller, uses InfoPump to automatically move 10,000 invoice and customer records every night from an IBM Application System/400 to a SQL Server running under OS/2 on a Novell, Inc. LAN. Sales and accounting staff use Microsoft Corp.'s Access to retrieve the data, which is information about the sale of some 40,000 software products.

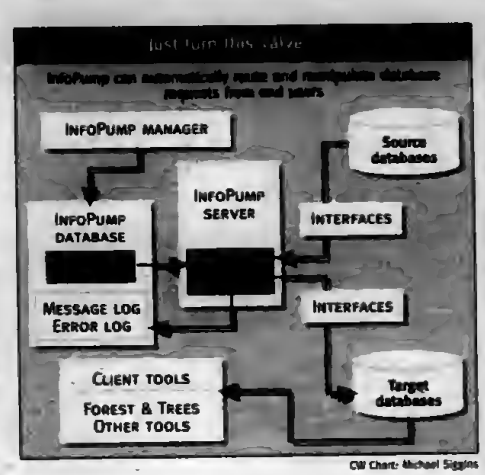
Paul Barron, senior programmer analyst at Corporate Software, said InfoPump replaces a multijob, labor-intensive and error-prone process to join tables and convert and download data. He said it takes about four minutes to do what once took up to 1½ hours. "Now it's a hands-off process," he said.

Barron also praised the ease of using InfoPump's Script language, saying the process of joining AS/400 tables holding invoice header, invoice detail and customer data was coded in a single instruction.

Yvonne Cekel, marketing vice president for Channel products, said InfoPump is not always used to pump data from one database to another. For example, she said, Bankers Trust Co. uses it to monitor SQL Server databases holding pending trade information. In near real time, InfoPump looks for incomplete records and notifies traders by sending messages to them via Lotus Development Corp.'s Notes.

"InfoPump supports a concept we call the 'datamart,'" said Stuart Woodring, a software analyst at Forrester Research, Inc. in Cambridge, Mass. "The idea is the quickie mart on the corner; you just go there when you want something — no hassle, no overhead."

InfoPump costs $25,000 per server, including two database interfaces and two development environments.



CW Chart: Michael Siggins

Pump it up

The InfoPump Server is an OS/2-based query server that does the following:
- Pulls the internal database and follows request instructions.
- Deletes unwanted rows, changes column names, converts data formats and does mathematical operations.
- Combines data from multiple sources.

The InfoPump Manager is a Windows-based development environment that performs the following:
- Defines data sources and destinations, including log-in, password and server names.
- Helps build and debug data routing requests.
- Monitors and logs server activity.

The InfoPump Database stores information about data routing and transformation, scheduled requests, error and message logs and user permissions.

Are you treading on someone's software patent?

By Garry Ray

Did you know that your developers may be breaking the law? Probably not. But a wave of software patents issued by the U.S. Patent and Trademark Office since the 1980s may put your company at risk.

According to experts in the field, more than 10,000 outstanding software patents may exist. Many are sweeping in their coverage, such as a notorious patent owned by a New York firm for natural order recalculation in spreadsheets. The company, REFAC International, filed suit in 1989 against Lotus Development Corp. for violation of the patent.

Although no one really knows how many software patents have been granted, or how sweeping they may be, there are some clues. A recent study presented by Electronic Data Systems Corp. in Dallas to the State Bar of Texas said that more than 1,500 software patents were issued in 1992. These include grants for a "software performance analyzer" — issued to Hewlett-Packard Co. — and a method to "recover objects in an object-oriented computing environment," which was issued to IBM.

Patent plethora

In 1992, the U.S. Patent and Trademark Office issued 97,958 patents in all categories. Of those, 1,510 are thought to be software patents. More than 10,000 software patents have reportedly been issued since 1972.

Out of control

But no one knows the actual number of outstanding software patents or how wide their scope may be, said Glen Self, EDS vice president of research and development and the author of the study. "The problem is that [software] patents show up all over the place," he said. Because the Patent Office has no distinct category for software patents, filings generally show up in categories for medical, electronic and mechanical devices. That makes it difficult to determine whether a patent has been issued for a specific software process, Self explained.

Image Builder

Multimedia and imaging technologies dominate the top categories of software for which patents were issued in 1992

Top 10 software patents 1992

		Number issued
1	Color imaging	121
2	Data/Video images	112
3	Image processing	95
4	Character processing	71
5	Document display	69
6	Data/File access	68
7	Display processing	64
8	Document processing	62
9	Interactive systems	57
10	Probability functions	57

Source: Electronic Data Systems Corp.

But the Patent Office does not plan to make the search any easier. The hair-splitting stance of the agency is that "we don't issue software patents," said group director Gerald Goldberg. However, patents can be granted when "a program forces a computer to operate in a certain way," he said.

Under current law, a patent cannot be granted if "prior art" has been published or otherwise disclosed in public. That means a software process already disclosed in a textbook, technical journal, newsletter or classroom handout cannot be patented.

But the Patent Office has very limited access to the enormous range of printed materials produced by the software industry. "There's not much information available to us," Goldberg said.

Patents, *page 76*

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Study sees long life for mainframe apps

By Jean S. Bozman
SANTA CLARA, CALIF.

Even the quickest re-engineering efforts will not remove all applications from most large corporate mainframes for five to 10 years, according to a recent Gartner Group, Inc. study.

Rather, users will get maximum benefit by re-engineering certain classes of applications that provide the biggest potential paybacks. These include decision support, office automation and interactive applications, Gartner Group said. They constitute about 37% of all MVS applications, most of which Gartner Group said would run less expensively on other platforms.

The remaining 63% are batch or transaction-oriented programs, most of which will be used for 10 years or more, said Roy Schulte, a vice president of Gartner Group's Software Management Strategies service.

About 20% of all existing on-line transaction processor and batch applications can be easily ported to other platforms, including Unix systems, where they can be run less expensively, Schulte said. The rest, about 80%, will be more costly to migrate to open systems during the next three to five years, he said. Many of those MVS applications could be rewritten when they are due for retirement, or as users depreciate the mainframes they already own.

The bottom line is that MVS mainframes will not go into oblivion anytime soon. "What we're depicting is the fade-in, fade-out school of thought," Shulte said. "That's because it's cheaper to run some of your MVS applications on the mainframe than it is to re-engineer them." However, most software development — whether for MVS or client/server systems — will be much less expensive if moved to PCs or workstations.

Users taking action

Users at some large mainframe sites appeared to agree with the Gartner Group thesis, even if they disagreed with its time frame. Some, such as Associated Grocers, Inc. in Seattle, plan to move all applications off their IBM-compatible mainframes within five years.

Other sites are redirecting new application development to open systems.

"If you take the true cost of converting those [MVS] applications to other platforms, you don't gain much," said Al Smith, deputy director of telecommunications at the State of California's Teale Data Center in Sacramento. "You'd be better off whittling down the application backlog by putting those applications on open systems platforms." Smith, whose data center houses five large mainframes, said IBM could keep mainframes viable by offering alternate systems with better price/performance.

Some other analysts said they believe users accelerated their re-engineering plans as they watched IBM's business problems grow in 1992. "I think there's been a big change very recently, as IBM's problems became pronounced," said Bob Waldman, vice president of applications at Real Decisions Corp., a Darien, Conn., consultancy. "I think that woke up a lot of companies."

The pace of re-engineering may pick up in the late 1990s, as information systems organizations recentralize distributed applications onto a new generation of open systems hosts, Waldman said. "In five years, people won't write software unless it's portable to the three or four operating systems that have survived," he said. "Things are moving now toward client/server systems, but it could take 10 years before many IMS applications are replaced."

Software Development '93 products, standards

Windows software developers were greeted at the recent Software Development '93 in Santa Clara, Calif., by a number of tools and new standards that may help them create higher quality products. Among the notables were the following:

- **Intel Corp., Borland International, Inc., Microsoft Corp., IBM** and others announced the formation of the Tool Interface Standards committee, a group that plans to promote the interoperability and portability of development tools across 32-bit Microsoft Windows, OS/2 and Unix environments.
- Microsoft unveiled Visual C++, a C++ compiler that combines traditional compiler tools with "wizards" that help step users through the initial stages of application development.
- **XVT Software, Inc.** demonstrated XVT-Design++ Release 1.0, a set of tools and a framework that allows developers to write Windows applications that are easily portable to other platforms, including Microsoft's Windows NT, Apple Computer, Inc.'s Macintosh, Unix, VMS and DOS.

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Patents

CONTINUED FROM PAGE 73

That shortcoming has not stopped the agency from following the letter of the law, "If we can't find the prior art, we issue the patent," Goldberg said.

Help may be on the way. An industry think tank in Ann Arbor, Mich., recently began asking for contributions to its online database of prior art. The group, the Software Patent Institute (SPI), hopes to collect a variety of information from programmers and computer companies and then make this database available to the Patent Office so that it can better conduct its patent investigations.

"The Patent Office is very anxious to get this stuff," said Bernard Galler, founder of the SPI and a professor at the University of Michigan. He said the SPI has been negotiating with IBM to include the company's 5,000-item "Technical Disclosure Bulletin" in the database.

But some critics of the patent process said the SPI's noble intentions will come to naught.

"The SPI says everything will be fine if we can get the Patent and Trademark Office to do what it is supposed to do," said Richard Stallman, a spokesman for the League for Programming Freedom, a software interest group in Cambridge, Mass. But Stallman said software patents are inherently bad for programmers and software designers. "We have to get rid of all [software] patents because they turn software development into a minefield at every design decision," he said.

Even those who sympathize with the SPI question the necessity of software patents.

Brian Kahin, a patent attorney and director of the information infrastructure project at Harvard University's Kennedy School of Government, said software patents are "philosophically, a bad idea" because they "impose a bureaucratic regime on the innovation of the software industry." Although he is on the advisory board of the SPI, which he hopes will rationalize the software patent process, Kahin also said that the Patent Office imposes "hidden costs on developers and customers."

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In Brief

Tool deal agreement

Object Design, Inc. and Lucid, Inc. have co-developed tools and documentation to integrate the ObjectStore database and the Energize C programming system. The companies said the integration facilities provide better database schema generation and the ability to launch ObjectStore Browser and SchemaDesigner directly from the Energize user interface.

Partnership formed

Mozart Systems Corp. and Gupta Corp. have announced a strategic partnership to integrate the Mozart 3.1 fourth-generation language development tool and Gupta's SQLBase.

Testing tool for CASE

Interactive Development Environments, Inc. has added a new software testing tool to its computer-aided software engineering (CASE) workbench with the recent purchase of Programming Environments, Inc. The tool, T, provides automated test case generation through design specifications rather than source code, according to company officials.

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Application development tools

KL Group, Inc. has introdoced the XRT/3d for the Open Software Foundation's Motif.

According to the company, the produet provides Motif application users with a three-dimensional surface and a contour graphics widget that displays 3-D data in X11-based applications.

The product has the same application programming interface as the OSF/Motif, and XRT/3d can display surface data as a wireframe grid or a smooth shaded surface, the company reported. When using a linear distribution ur a custom distribution method, the widget can automatically coutour and zone the data.

Other features include perspective control and automatic handling of missing data values.

An XRT/3d development license costs $1,495.

▶ *KL Group*
Suite 204
134 Adelaide St. East
Toronto, Ontario
Canada M5C 1K9
(416) 594-1026

Visual Edge Software Ltd. has announced UIM/X 2.5, a graphical user interface (GUI) builder.

Enhancements in this release include GUI object-class components, UIM/X palettes, C++ code generation, 100% support of the Open Software Foundation's Motif 1.2 and a cross-platform development capability.

UIM/X 2.5 costs $5,000.

▶ *Visual Edge Software*
3870 Cote Vertu
St-Laurent, Quebec
Canada H4R 1V4
(514) 332-6430

Sheridan Software Systems has announced Version 2.0 of VBAssist, a programming tool.

The product was designed to enhance Microsoft Corp.'s Visual Basic 2.0 development environment. VBAssist 2.0 offers a variety of features, including property synchronization, control alignment and visual tab settings.

Scrollable forms and picture boxes can be made, and with Property Templates, users can visually create, edit and save customized versions of the objects within the Visual Basic Toolbox, the company reported.

New features such as right mouse button support, quick access buttons, form lock mode, code assistant and VB desktop optimization are also provided.

VBAssist 2.0 costs $179.

▶ *Sheridan Software Systems*
65 Maxess Road
Melville, N.Y. 11747
(516) 753-0985

Application Development Consultants, Inc. has announced CWM/Extend, an Extensibility Tool Set for Version 2.3 of the company's CASEware Modeller.

According to the company, the product allows for addjtions to the existing tables and definitions of new tables such as putting foreign keys into existing tables.

CWM/Extend consists of a program generator and report generator, a fourth-generation language programming environment, table creation and maintenance, link libraries for repository access in C and Cobol, plus a SQL interpreter.

Pricing begins at $4,400.

▶ *Application Development Consultants*
Suite 226
12000 N. Dale Mabry
Tampa, Fla. 33618
(813) 265-3708

Cobalt Blue, Inc. has released Version 3.4 of FOR C, Fortran-to-C conversion software.

The prodnct is available on a variety of platforms such as Digital Equipment Corp.'s VAX/VMS, Silicon Graphics, inc.'s Iris and IBM's RISC System/6000 ADX. According to the company, FOR C provides extremely readable, maintainable code translations for precise and natural-looking C code.

A new static analysis and error-checking capability has been added for detailed code analysis, and FOR C offers broad support for Fortran compilers from Microsoft Corp. and Sun Microsystems, Inc.

The MS-DOS version costs $775 until June 30. At that time, the price increases to $975.

▶ *Cobalt Blue*
Suite D-400
875 Old Roswell Road
Roswell, Ga. 30076
(404) 518-1116

Oracle Corp.'s Federal Division has announced Version 1.0 of GenerAda, an Ada code generator.

According to the company, the product makes it realistic for users to generate Ada code directly from system design information that is created by using Oracle's computer-aided software engineering tools. An Oracle dictionary description of a database and the modules and functions for the database are translated into Ada by the product.

A six-user license costs $50,000.

▶ *Oracle*
500 Oracle Pkwy.
Redwood Shores, Calif. 94065
(415) 506-7000

Progress Software Corp. has announced Progress/400, a fourth-generation language.

According to the company, the product is a development environment that enables users to quickly develop applications for deployment on IBM's Application System/400 by using 5250 block-mode terminals. Applications can be developed either directly on the AS/400 or on a PC workstation and then deployed in the native AS/400 or client/server environments.

Without any modifications made to the application code, the applications can be deployed across every Progress-supported computing platform.

Prices range from $3,400 for the AS/400 Model P02 to $105,000 for the AS/400 Model P95.

▶ *Progress Software*
14 Oak Park
Bedford, Mass. 01730
(617) 280-4000

Code libraries

ImageSoft, Inc. has released Version 3.0 of Object/Engineering, an enhanced version of the advanced C++ scientific class library of ready-to-use components.

Object/Engineering provides functions such as optimization, statistical tests and random generators, exception handling, signal processing and time series and numerical analysis.

Version 3.0 offers an assortment of features, including 19 new statistics distributions, four new regression techniqnes such as general least squares and nonlinear regressions, two new root finding methods and bidimensional interpolation.

Prices range from $499 to $899.

▶ *ImageSoft*
2 Haven Ave.
Port Washington, N.Y. 11050
(516) 767-2233

Compilers

Microport, Inc. has started shipping the optimized C Compiler.

The product is an optional ANSI C Compiler from Unix System Laboratories, Inc. for Intel Corp.'s Pentium processor.

According to the company, the optimized C Compiler has a blended-mode option for applications that will run on both 486 systems and Pentium systems and a Pentium-only mode for applications that were designed for operation only on a Pentium-based system.

The compiler costs $400.

▶ *Microport*
Suite E
108 Whispering Pines Drive
Scotts Valley, Calif. 95066
(408) 438-8649

Languages

Four Seasons Software has announced snpport for Cobol file structures for the SuperNova fourth-generation language.

According to the company, the support enables SuperNova to access files that had previously been maintained with Cobol programs. Users can build applications in two steps.

The first step consists of building a SuperNova application that maintains current Cobol files. Data from those Cobol files is migrated to any supported relational database management system in the second step.

Without modifying a nser's program, the SuperNova application can access data in the RDBMS.

Pricing for SnperNova licenses ranges from $990 to $100,000.

▶ *Four Seasons Software*
2025 Lincoln Highway
Edison, N.J. 08817
(908) 248-6067

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The SAS/C C++ Development System is fully compatible with the AT&T 3.0 release of the C++ language with the exception of template support. It implements the familiar constructs of the C++ programming language—including in-line functions, operator and function overloading, references, and free store management—providing a robust and productive applications development environment.

The enhanced SAS/C Full Screen Debugger, available with the SAS/C compiler, also supports C++, allowing you to debug C++ as well as mixed C and C++ applications.

A Plus for Portability

The SAS/C C++ Development System is an indispensable tool for migrating existing C++ applications developed in other environments. Applications built on UNIX workstations and PCs can be ported to the mainframe with minimal effort. As a result, your workstation becomes an effective platform for mainframe applications development.

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HERE and THERE

Despite language barriers, time-zone tag, inflated software prices and other hassles, IS managers working in the U.S. for overseas firms are helping drive worldwide innovation

By Thomas Hoffman

Overseeing an information systems division is challenging enough when the brass and troops are just down the hall.

Imagine the difficulties faced by a single-person IS staff serving the entire West Coast for one of the world's largest banks located 6,000 miles away.

Meet Scott B. Smith, a systems analyst in the management services division of Barclays Bank PLC in San Francisco. As the British bank's only IS staff member west of the Rocky Mountains, Smith handles all systems, telecommunications and related support for Barclays' offices across California.

"Sometimes you feel forgotten when you're so far off," Smith laments. He's not alone in the sentiment.

As the business world continues to become a global village, more IS managers are finding themselves working for foreign-based firms. And that presents a whole new set of challenges, ranging from paying higher markup on hardware and software, language barriers and time-zone differences to radically different views about the role of technology.

"I sense that sometimes there's less trust in technology [in Europe] and a strong urge to do things manually," says Patrick Carney, director of IS at ABB Power Generation, Inc. The Brunswick, N.J., firm is a division of ASEA Brown Boveri, a Swedish/Swiss-owned engineering conglomerate.

Even so, spunky IS managers are not only surviving in unknown territory but in some cases also driving technology innovation and standardization for the entire company.

Hypo Bank's Joe Michael Sanchez: *Wealth of products and skilled help make U.S. an attractive spot for IS development*

■ U.S. divisions drive downsizing

That's the case at ABB Power, which is helping to introduce downsizing, groupware and Microsoft Corp.'s Windows to its Zurich-based corporation.

Carney says the unit places a top priority on facilitating communications between its 100-plus U.S. divisions and the rest of its enterprise, and the unit is now 100% Windows-compliant.

But it's taken time for the parent to catch on, Carney says. He attributes this to the firm's centralized computing philosophy and a matrix management structure that he says can be confusing.

But differing philosophies, Carney adds, don't necessarily reflect negatively on his European counterparts. Instead, he notes that much European thinking stems back to a widespread mainframe mind-set, which reflects a lower rate of PC use compared with this country.

Indeed, while U.S. companies have generally embraced downsizing, many European organizations still prefer a centralized mainframe approach.

However, Zurich-based ASEA Brown has also proven to be open-minded: Downsizing successes for U.S. divisions have convinced the parent to standardize on several leading-edge technologies, including Lotus Development Corp.'s CC:Mail and Notes software.

"They've seen the benefits we've attained," Carney adds, "so they're starting to ramp up."

The parent is also using its U.S. subsidiaries to test client/server computing.

But as these concepts begin to catch on, another problem emerges for U.S.-based firms trying to drive over-

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Here and there

CONTINUED FROM PAGE 81

seas innovation: costly software.

■ Expensive software costs slow standardization

While PC software in the U.S. is often a cheap commodity, Europeans sometimes pay up to three times for the same product, which must be customized and is then slapped with stiff tariffs. A copy of Microsoft Office, which costs about $470 in the U.S., sells for more than $1,000 in Europe, Carney says.

Joe Michael Sanchez, assistant treasurer responsible for MIS at Hypo Bank in New York, knows the challenge well. As MIS chief at the first U.S. office of Munich, Germany-based Bayerische Hypotheken-und Wechsel-Bank, Sanchez decided to use Fischer International Systems Corp.'s Watchdog PC security software.

But when the bank's European subsidiaries decided to also use the $170 package, they discovered the cost of buying through a middleman shot the price to $450 to $500 a copy.

Fortunately, Sanchez says, the parent firm was able to work out a better, more affordable deal with Fischer. "Now they're able to ship a European version from New York and bypass the middleman, who was trying to buy his new Mercedes from us," Sanchez jokes.

Purchasing problems aside, Sanchez says the language barrier can also be an issue. Many of his German managerial peers were taught to speak and understand an older, more formal brand of English, explains Sanchez, a seven-year Hypo Bank employee. That can make it tough to explain the intricacies of an IS project.

"Sometimes you have to change your vocabulary around for them to understand you," he says. "This is one of the greatest challenges."

Plus, Germans typically ask fewer questions than most Americans would, he says, and are proud. That sometimes tempts them to voice more understanding than actually exists, Sanchez adds.

■ Nets of the world, unite

But as is the case at ABB, standardization and networking are helping to smooth global differences at some corporations.

Barclays, which now has a worldwide Digital Equipment Corp.-based network, is slowly evolving toward PC local-area networks connected over an X.25 backbone.

"It's a slow process, but it will happen," Smith says. "These improvements will increase communications, and in this day and age, communications can really make or break a company, especially on an international scale."

Hypo Bank is also developing a global wide-area network. Although the bank's head office is in Germany, most systems testing is conducted in New York under Sanchez's supervision. He says the bank prefers to do most of its IS development in the U.S. because both technology and skilled technologists are more readily available than in Europe.

The approach seems promising: Last March, for example, Hypo Bank installed IBM Token Ring LANs supporting Compaq Computer Corp. notebooks running IBM's OS/2 2.0 network operating system and Microsoft's Windows and MS-DOS on workstations.

The success of the beta-test site in New York helped Sanchez convince German management to install the same equipment in London, a project completed last October. German branches are currently being linked together under the same architecture, and Sanchez is flying to Hong Kong this month to start networking installations at locations there.

"Once the Hong Kong link gets put in place, we'll can probably tie them all together," Sanchez says. Most likely, the WAN will use 64K-byte or T1 connections, he adds.

■ Different ways to keep in touch

IS managers working for overseas firms have also had to learn to adapt to unfamiliar organizational structures.

Barclays' holding company, for instance, splits its IS function between two groups: network services — which supports networking and telecommunications — and computer operations, which handles systems management and mainframes.

Smith, part of the first group, says the structure can be baffling. "There are a lot of gray lines," he says.

Companies take different approaches to managing the IS hierarchy. At ABB, Carney says, several IS managers from around the world meet each quarter to discuss standardization and coordination issues and to do some brainstorming. No such meetings occur at Osaka, Japan-based Minolta Corp., according to Gary Gould, director of MIS at Minolta's U.S. data center in Ramsey, N.J.

However, Gould says communications between divisions in the U.S. and Japan are good, facilitated by electronic mail. A Japanese executive was sent to Minolta's Ramsey facility to serve as a liaison between this site and headquarters in Japan, he adds.

Moreover, Gould says Minolta's U.S. divisions are given a good deal of autonomy in their IS directives. "Basically we install whatever technology will support our business needs, but we keep them very well-informed," Gould says.

Smith says the nine-hour time difference between London and San Francisco can be a problem. "Sometimes, our folks in the UK will forget and call me at some ungodly hour thinking I'll be in the office," he says. Fortunately, Smith and his British peers often use the New York offices as an communications middleground.

■ Europeans challenged, too

Of course, overseas problems work both ways: Dateline differences also plague European IS executives who work for U.S.-based companies.

Just ask Jean-Pierre Salib. As director of systems at Los Angeles-based Twentieth Century-Fox Film Corp., Salib works out of Paris and is responsible for all IS activities for the filmmaker's foreign subsidiaries.

"There are challenges in dealing with suppliers who are far away, and there are different norms in each country," Salib says. He points to difficulties in working with multiple IBM subsidiaries in Europe because the computer giant assigns a separate division to each country there.

But Salib licked that problem by routing all hardware and software procurement through International Computer Group, a European systems integrator with offices in Paris. "It makes it easier to deal with suppliers because we're all in the same time zone," Salib says.

That approach has proven beneficial, he says, because working with a single point of contact for all IS requirements allows him to work with a vendor who knows his company's hardware and software needs.

■ Global needs, local sensitivity

Once standardization occurs, the problems are far from over.

One big challenge, says Ian Butterworth, senior vice president of information technology at Holiday Inns, Inc., is sticking to a uniform approach when delivering information technology around the world.

"We have to be sensitive to our approach in applying information technology while being able to reflect on regional needs," says Brussels-based Butterworth, who is charged with coordinating his firm's international IS efforts. "We try to apply the same standard systems throughout the enterprise."

Holiday Inns is now rolling out a private, two-way satellite network in Europe for point-to-point communications between its hotels in Europe and its primary data center in Atlanta, Butterworth says. The project, which started last July, will include the installation of 100 to 150 satellite earth stations in Europe and should be completed by this summer.

Some of the challenges Salib and Butterworth face in Europe, such as dealing with different telecommunications tariffs and standards between countries, are far different than those they would face in the U.S.

"You read a lot about 1992 and the unified Europe," Butterworth says. "The reality is there's a little way to go before this is a seamless continent." •

Euro-gloom continues

While U.S. and European firms continue to link and expand, the European market is hardly booming. A new report by International Data Corp. says 1992 was as dismal as 1991 for the European computer industry.

The Framingham, Mass.-based market researcher says 1993 looks only slightly better, if that. IS growth in Europe this year is forecast at 3.3% to 4.4%.

A weak European economy, especially in Germany, unstable currency and more vendor competition accounted for the lackluster performance, according to the February 1993 *IDC Eurobrief*.

For the journey...

Dealing with technology and management is tricky enough. Add unfamiliar business customs and cultures to the mix and things can really get wild. If you need to know, for example, that table pounding is considered OK in America, embarrassing in the UK, uncouth in Germany and rude in Luxembourg, consider grabbing *When In Rome: A Business Guide to Cultures & Customs in 12 European Nations*, published by the American Management Association. Call (212) 586-8100 for details on the book.

Published a couple of years ago at the peak of Euro-curiosity but still very relevant today, this concise (less than 200 pages) and well-organized paperback leads you on a tour of business and work ethics, corporate etiquette, organizational structures, sense of humor, meeting and leadership styles and attitudes toward women, elders and outsiders — even the drinking preferences of a dozen of the largest countries in Europe.

You'll learn, for example, that when doing business in Germany you'll need to work around an average of 39 paid holidays and be able to distinguish extroverted, beer-drinking Bavarians from quieter, more sober Swabians.

If you're planning business travel or dealings in France, Germany, England, Italy, the Netherlands, Spain, the UK, Belgium, Denmark, Greece, Ireland, Luxembourg or Portugal, consider this low-cost, cross-cultural crash course.

A new manual for travelers of a very different kind has just been published by Meckler Publishing: *Internet Primer For Information Professionals: A Basic Guide to Internet Networking Technology*. Call (203) 226-6967 for information on the book.

Many users already know that there's no faster way to make global connections than through the Internet. This book can help you learn to master the basics so you, too, can speak Internet.

—*Joseph Maglitta*

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SOURCES OF PEN, MOBILE & WIRELESS SOLUTIONS:

C = See this company at Spring Comdex—Atlanta, May 24-28, 1993

Dynamic Bytes develops applications for working with CAD/CAE files, digital photographs, GPS information and graphics in mobile and pen environments. 1-415-854-9335

Ink Development markets productivity software designed for mobile computing. InkWare™NoteTaker and other applications are available for PenPoint and PenWindows. 1-415-573-6565

Nestor, Inc.

"NestorWriter™ is an adaptive handwriting recognition system for pen computers. PenShell™ brings pen input to DOS." 1-401-331-9640

notable

Notable is a leading developer of innovative communications and productivity applications for the new generation of mobile computing / communicating devices. 1-415-312-0800

PFI PenFact, Inc.

Manufacturing applications for pen computers. Proven products and services that improve quality, simplify production reporting, and eliminate paperwork. 1-508-872-6900

PenMetrics, the technology leader of mobile GIS solutions for Windows, markets Field-Notes™, software for field data collection. 1-800-537-3322

PenStuff

Software for field data collection and processing of databases, imaging, communications and GPS information. Complete services, from pilot projects to full scale production systems. 1-716-461-3182 C

PenUltimate

The Innovator in Mobile, Total Solution Software. Horizontal and Vertical Applications including SalesForce™ with SSRM™, redefining productivity and how it's managed. 1-714-476-6360

PenWare

PenWare develops compact, portable applications for mobile pen computing. PenWare's first application is the award-winning PenCell spreadsheet. 1-415-858-4920

SHARPENED

Sharpened Software is a major manufacturer of high-quality business productivity software for pen-based computers. For product information, call 1-206-283-0628

SunSelect

SunSelect's PenTOPS and PenControl allow Penpoint-based tablet users to access file and printer resources from desktop PCs and networks. 1-800-677-6265

Thinque Systems provides high quality pen-based Sales Automation, Field Service Automation and Route Accounting Software. Available for Windows For Pen and PenRight! 1-818-752-1350

High-level software tools utilize common APIs to develop protocol transparent connectivity to Wide Area Public Communications Services. 1-800-DEC-INFO ext. WIRE

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SuperScript

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Transform your notebook computer into a pen computer, WriteAway!, a user-installable, transparent tablet and pen kit for $595 1-508-858-3742 C

DAUPHIN

Dauphin Technology's products include the D5000 convertible Pentop, the D5000 Color and the 2.2 lbs., DOS/Windows compatible, 486SLC-based DTR-1. 1-800-782-7922 C

FUJITSU

Fujitsu Personal Systems is a leader in mobile & pen-based computing. FPSI provides systems optimized for size, weight, battery life and overall portability 1-800-831-3183

GRiD

The leader in pen computing, GRID designs and markets tablet, hand-held and the award winning Convertible pen-enabled notebook computers worldwide 1-800-222-4743 C

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Infonite

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SLATE

MicroSlate's extensive product line supports all available pen operating systems and includes the DeskSlate 400, the first 486 pen computer 1-514-444-3680

NCR

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NCR is a leading supplier for mobile networked computing solutions for the enterprise. Contact NCR Direct at 1-800-637-2600 for more information.

NEC

The NEC Ultralite®, Autograph™ and Versa™ are high performance, feature rich pen systems designed to provide tools for a variety of business applications. 1-800-NEC-INFO

Nimble Computers

Manufacturer of pen-based computers/communicators weighing approximately one pound and 6"X8"X3/4" in size. Available in 186/386/486 versions. 1-310-592-6200

CIC

Incorporating CIC's Handwriter Recognition System software, CIC's PenDOS pen operating environment lets users develop new applications and run existing mouse-aware DOS applications without modification. 1-415-802-7888

Microsoft

Microsoft Windows for Pen Computing extends the windows environment to pen computing. 1-206-882-8080

TelePad

TelePad offers custom software, wireless communications and pen computers to provide a Total Customer Solution for each client. 1-703-834-9000

PENRIGHT!

PenRight! is a pen-based, graphical user interface and handwriting recognition for MS-DOS computers. PenRight! is installed on more than 80% of the pen computers in the field today 1-800-222-4743 C

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GENERAL PROGRAMMING INC.

GPI provides turn-key or match-up solutions to distribution companies for remote data capture and related integrated information systems. 1-214 385-0400

Digital offers Network Adapters to interface to the Wireless LAN and Access Points to communicate with the wired network. 1-800-DEC-INFO ext. PEN C

PHOTONICS

Photonics' COLLABORATE™, diffuse infrared wireless networking for indoor mobile computing, facilitates group-ware applications, portable-to-desktop connectivity and wired network access. 1-408-955-7930 ext. 600 C

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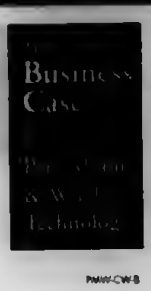

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PMW-CW-8

Intelligence Files

Footwear blues

The U.S. footwear industry has been able to slow the erosion of its market share by using computers to integrate design, manufacturing, management and marketing functions. But the good news ends there.

The technological advancements have been limited to the larger firms. Smaller firms have been slow to adopt computerized manufacturing equipment because they do not have the volume to justify the cost.

Moreover, industry sources said they believe that no amount of high technology will be able to offset the much lower labor costs of foreign competitors. And, if foreign makers can afford to buy the technology, even that competitive edge will wither away.

Source: "Industry and Trade Summary: Footwear," U.S. International Trade Commission (publication 2572-GM-5).

Battle line: Ergonomics

The Occupational Safety and Health Administration's (OSHA) request for comments on the need for an ergonomics standard has drawn mixed, often conflicting views. Computer makers and companies that employ large numbers of VDT users contended that any standard would be premature and would lack a firm grounding in science. Labor unions disagreed, urging OSHA to move quickly to issue mandatory rules.

Opinions were sharply divided on fundamental issues such as the increasing presence of repetitive strain injuries, with labor unions pointing at them as a rapidly growing problem, and opposing groups such as the Newspaper Association of America arguing that many of the cases are unconfirmed.

Source: *VDT News, The VDT Health and Safety Report*, March/April 1993.

Stability through information

Many of today's companies are not equipped to deal with increasingly fast-paced change. Organizations must learn *dynamic stability* — in other words, to serve a wide array of customers with changing product demands while building on long process and knowledge capabilities. One of the most critical steps to achieving this state is to manage information strategically.

The three big challenges of information systems include giving managers the capability to rapidly pinpoint product and process know-how in the company, giving managers data about capability allocation amid rapid change and linking functions and organizations horizontally to increase speed and flexibility.

Source: *California Management Review* "Achieving Dynamic Stability through Information Technology," by Andrew C. Boynton Winter 1993.

Flexiplace works

The U.S. government's experiment with telecommuting, called the Flexiplace program, appears to be working.

A study of the pilot program shows that employees liked working at home a few days each week and felt more productive. Some colleagues felt envious. Managers continued to worry about losing control but generally supported the program.

Among the few small problem areas were the lack of available laptop computers or PCs for home use. Also, some participants reported working longer hours on their "home" days. But most of the conflicts surrounding Flexiplace were resolved in the organization within two to three months.

Source: Report No. PRD-92-15, U.S. Office of Personnel Management, Washington, D.C.

Compiled by CW staff members.

Executive Track

Former Unisys Corp. Director of Services Marketing Woody Mewborn has been named vice president of U.S. operations at **Esprit Consulting Ltd.** Based in the UK, Esprit specializes in teaching corporate information systems professionals to act as consultants to their internal clients.

At his new post, Mewborn is heading the newly opened Atlanta office, which will serve as a base for the company's North American operations.

President Bill Clinton has nominated **Kathryn Sullivan** as chief scientist at the **U.S. Department of Commerce's National Oceanic and Atmospheric Administration** and **Arati Prabhakar** as director of the Commerce Department's **National Institute of Standards and Technology.**

Sullivan, a seasoned geologist and oceanographer, is a NASA missions specialist. Prabhakar is currently serving as director of the Microelectronics Technology Office for the Defense Advanced Research Projects Agency.

Former Apple Computer, Inc. executive **Allan Z. Loren**, who is president and chief executive officer of **Covia**, a Rosemont, Ill., computerized reservation system, has been named a director of **U.S. Cellular Corp.** Based in Chicago, U.S. Cellular is a manager of cellular systems. In expanding its board to seven seats and appointing Loren, its chief executive cited the new director's experience with fast-growing firms and changing information and distribution systems.

Princeton, N.J.-based **IMS America** has named **Kathryn M. Cullen** to be the general manager of its Strategic Information Services Division's newly minted Information Technology group. A subsidiary of IMS International, itself a Dun & Bradstreet Corp. subsidiary, IMS America is a purveyor of marketing and sales information on health care industries. Cullen, who comes to the firm after 14 years as a partner and director of large consulting firms, will focus on IS/business linkage, re-engineering and measurement of such initiatives.

HAVE YOU, OR A COLLEAGUE IN THE INFORMATION SYSTEMS FIELD, RECENTLY BEEN PROMOTED? *Computerworld* WOULD LIKE TO SHARE THE NEWS WITH THE REST OF THE IS COMMUNITY. PLEASE CONTACT SENIOR EDITOR NELL MARGOLIS AT 1-800-343-6474 TO PASS THE NEWS ALONG.

Calendar

APRIL 25-MAY 1

Xplor International's Vendor Interaction Symposium Information Opportunity Networking '93. Denver, April 25-28 — Contact: Xplor International, Palos Verdes, Calif. (310) 373-3633.

Marketing the IS Organization Internally. Philadelphia, April 26-27 — Contact: Ouellette & Associates Consulting, Inc., Bedford, N.H. (603) 623-7373.

The Softool User Group. Santa Barbara, Calif., April 26-28 — Contact: Softool Corp., Goleta, Calif. (805) 683-5777.

USE/Plus/CUBE Exposition. Phoenix, April 26-28 — Contact: The Sanford Organization, Wauconda, Ill. (708) 526-2010.

National Computer Graphics Association (NCGA) Solutions Applications for Implementation '93 Conference. Philadelphia, April 26-29 — Contact: NCGA, Fairfax, Va. (703) 698-9600.

Third Sourcing Interest Group (SIG) Conference. Chicago, April 27-28 — Contact: SIG, Sherman Oaks, Calif. (818) 784-7755.

Distribution/Computer Expo '93 — Exhibit and Seminar. Chicago, April 27-29 — Contact: C. S. Report, Inc., Uwchland, Pa. (215) 458-8026.

Incotek '93. Warsaw, Poland, April 27-30 — Contact: Global Technologies, Inc., Washington, D.C. (202) 797-3782.

MAY 2-MAY 8

Information Systems Audit, Control and Security Conference. Lake Buena Vista, Fla., May 2-7 — Contact: The EDP Auditors Association, Rolling Meadows, Ill. (708) 253-1545.

The Workflow Conference on Business Technology. Boston, May 3-5 — Contact: The Workflow Institute, Alameda, Calif. (510) 769-9627.

LotusWorld '93. Boston, May 3-6 — Contact: Daniell & Keefe Associates, Sudbury, Mass. (508) 443-3330.

James Martin World Seminar. Boston, May 3-7 — Contact: Extended Intelligence, Inc., Chicago, Ill. (312) 346-7090.

DB/Expo '93. San Francisco, May 3-7 — Contact: NDN Enterprises, Inc., Mountain View, Calif. (415) 966-8440.

Digitalk's Developers Conference. Costa Mesa, Calif., May 4-6 — Contact: Digitalk, Los Angeles, Calif. (310) 645-1082.

The National On-line Meeting. New York, May 4-6 — Contact: Carol Nixon, Learned Information, Inc., Medford, N.J. (609) 654-6266.

Unix Reseller Show and Conference. Dallas, May 4-6 — Contact: Expoconsul International, Inc., Princeton, N.J. (609) 987-9400.

Process for Using Quantitative Data to Manage Information Technology Projects and Activities. San Diego, May 6-7 — Contact: Quality Assurance Institute, Orlando, Fla. (407) 363-1111.

MAY 9-MAY 15

Advanced Topics in DB2. Toronto, May 10-12 — Contact: Barnett Data Systems, Rockville, Md. (301) 762-1288.

Eastern Communications Forum (ECF). Washington, D.C., May 10-12 — Contact: ECF, Chicago, Ill. (312) 938-3500.

Micro Focus Users Conference. Orlando, Fla., May 10-12 — Contact: A&R Partners, Redwood City, Calif. (415) 363-0982.

Systems Support Expo. Boston, May 11-12 — Contact: Bill Springer, United Publications, Inc., Yarmouth, Maine (207) 846-0600.

SunWorld '93. San Francisco, May 11-13 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

UCLA Information Systems Associates Symposium. Los Angeles, May 12 — Contact: Ginny Hyatt, University of California at Los Angeles, Los Angeles, Calif. (310) 825-1879.

Independent Computer Consultants Association Conference. Tarrytown, N.Y., May 13-16 — Contact: Independent Computer Consultants Association, St. Louis, Mo. (314) 997-4633.

MAY 16-MAY 22

ICA ComNet Dallas '93. Dallas, May 16-20 — Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

Wireless DataComm '93 Exposition and Conference. San Jose, Calif., May 18-20 — Contact: Communications Events, Inc., Norwalk, Conn. (203) 847-5131.

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GO CONFIGURE

As teams of developers work on bigger and more complex programs at the same time, they can inadvertently misplace, overwrite or change each other's code. Configuration management can prevent these slipups.

By H. Ronald Berlack

It's easy to see the importance of parts tracking and inventory control in auto manufacturing. If workers grab the wrong part or put in one too many, the result might be a minor rattle or a mid-

freeway breakdown. Customers will certainly be annoyed.

Software doesn't clang, but when one of its "parts" is incorrect or misplaced, it won't work right either. Oversight and control in the software process is just as important as it is in manufacturing if you don't want unhappy users.

While manufacturing companies use materials resource planning and engineering change orders to keep tabs on work in progress and changes, in the software development world, tracking is increasingly being handled by software configuration management (SCM) technology. SCM is a process, implemented through automated software systems and tools, by which information systems can keep tabs on a software system's "parts" — its interconnected programs, modules, objects and related items such as documentation.

SCM systems help developers manage features, such as bug fixes and enhancements, as a single unit even if the lines of code are scattered among several files.

There is a burning need for this kind of automated oversight and control as software programs increase in size, development becomes more complex and companies use concurrent engineering methods. In concurrent engineering, IS develops all aspects of a product (software design, mechanical design and electrical design) simultaneously.

Error control

When tens or hundreds of developers are working with bigger, more complex and modular programs at the same time, they are more likely to misplace, accidentally overwrite or inappropriately change software. SCM can prevent these kinds of clashes. With SCM, multiple development teams are less likely to step on one another's code and more likely to work cooperatively.

Because developers aren't introducing mistakes, the quality of development and the software itself improves.

And SCM helps developers create these better quality programs in less time. That's because programmers will spend more time writing new code than rewriting old code they can't find or have to fix. Today's SCM technology helps eliminate the manuals and paper forms (see story page 92) needed to track everything from file versions, bug fixes and product enhancements to change histories. Gone, too, is the expense of a staff needed to do this paper-based tracking. Programmers' time is spent programming, not doing clerical work.

Rather than being one more wall to climb over, SCM has become the path of least resistance for groups looking to build good code fast.

Take the task of tracking changes, for instance. To handle changes in software in the past, a programmer would have had to fill out a form indicating the author and purpose of the change and the software affected. Current SCM systems enable developers to record that type of information automatically, or they will prompt developers to record the information before accepting the change.

Later, when a developer is looking for the code segments that implement the change, he can even ask for them by name (for instance, "tax withholding update"). He does not have to hunt through source files looking for the right subroutine headings.

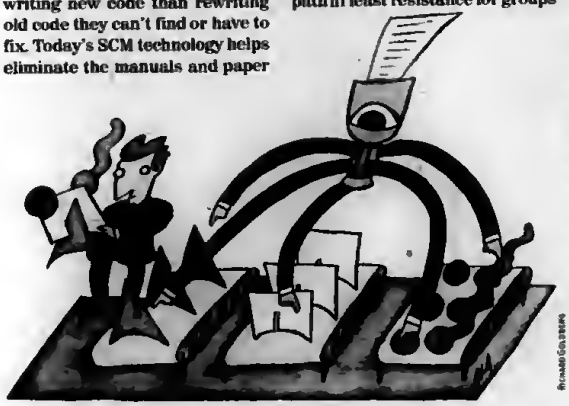
SCM also helps lessen the possibility of overwrites through conflict detection features. These features — in which developers are warned of a possible overwrite — come in handy when merging two files into one. For instance, two de-

Configuration management, *page 92*

THE DYNAMIC Ws

Configuration management takes care of the what, where and when of software development. It lets developers know:

- **WHAT** changes have been made to the code (bug fix or enhancement).
- **WHERE** changes were made (which file or program).
- **WHEN** changes were made (revision).
- **WHEN** changes were implemented (version).



Berlack is founder and a principal consultant at Configuration Management International, an Amherst, N.H., consultancy. He is also author of the book *Software Configuration Management* (John Wiley & Sons, 1992).

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Configuration management

CONTINUED FROM PAGE 89

velopers might be working on the same program, one implementing a bug fix and the other inputting an enhancement. If one developer's change is in danger of overwriting the other's, conflict detection kicks in. The system highlights the affected lines on screen, prompting the coder to resolve the conflict before the merge goes forward.

The more powerful a command language, the easier it is to use, the easier it is to adapt to a company's specific process and the more control it can bring to software development in general.

A command language is powerful to the extent that it can do the following:

- Accommodate both a command and a graphical user interface (and the user's preference for one or the other).
- Include a macro scripting facility (the SCM product's programming language) that is English-like and intuitive so that IS can easily adapt the the SCM product to a company's particular style of operation.
- Provide easy automation of SCM administrative procedures.
- Enforce policy decisions on software development, such as a decision not to allow two developers to change the same file at the same time.
- Provide separate developer work areas, yet allow for collaboration. For instance, it might enable different private versions of the same file to exist simultaneously.
- Facilitate development over a network.
- Automate complex tasks, such as operating on lists of objects.
- Migrate a change among alternate development paths.
- Perform incremental builds if coders add new product features to an existing executable.

20 questions

Software configuration answers questions such as: Which software parts belong to which release? Which hardware? Which documentation set? Which windowing system? Which features? Who made which changes and why? Which changes conflict with other changes?

Nyuk, nyuk, nyuk

Three stooge engineers find it tough going without SCM

Without an SCM system, developers can run into problems. Here's how things went wrong for three stooge engineers, Larry, Curly and Moe, who are hard at work on BioProject, a new biorhythm-driven project manager.

Larry is responsible for the module that does the biorhythm calculations. He has developed a module that calculates how many days have elapsed since a given date. Moe is developing a module to produce Gantt charts; he needs a date calculation module and sees what he needs in Larry's biorhythm module. Moe copies Larry's routine and makes minor changes to the interface.

After BioProject goes out to users, they find that the system incorrectly calculates dates when a Friday falls on the 13th of the month. Larry fixes the problem in the module and releases a new version of BioProject.

However, BioProject users find that while the system calculates dates correctly for biorhythm, it doesn't for Gantt charts. Because Larry is unaware of Moe's plagiarism, BioProject gets another costly, unnecessary bug fix. Users are irritated.

Curly finds that a bug in his data input routine causes the system to substitute the name "Freddy Krueger" for the real names of project participants who live on streets named after trees. Curly chases Freddy out of his module, BioProject gets rebuilt and developers issue another bug fix release.

Users start complaining that some nodes on the Program Evaluation and Review Technique (PERT) charts are attacking and slicing up other nodes. Now Larry, who is responsible for the PERT chart module, has to chase Freddy out of *his* module.

Meanwhile, Curly is pretending to be working on the speed of the BioProject printer drivers. Moe discovers a small bug in the reverse-leading routine of the driver and fixes it, storing the fixed code in the BioProject library. The next day, Curly saves his copy of the module (to which he has made no changes of consequence). Curly's new copy of the original driver overrides Moe's fixes.

With a management program that controlled source code, the three stooge engineers could have avoided these problems:

- **Double maintenance:** Larry and Moe had more than one copy of the same (or very similar) module on the system.
- **Shared data:** Curly's fix to one module caused side effects in Larry's module.
- **Simultaneous update:** Curly and Moe inadvertently stepped all over each other during the development process.

Based on "Controlling the Source" by Warren Keuffel in Computer Language *(January 1993). Copyright Miller Freeman, Inc.*

In the "old days," both developers would have made their changes, only to find out later that, mysteriously, the program no longer looked (or worked) the way either thought it would.

What makes good SCM

A good SCM tool, whether bought or created, requires both a powerful command language and a powerful repository.

A command language is important because it enables companies to control the management of their software on two levels: the project administrator level and the developer level. The project administrator defines the overall process for software management, while the developer actually goes about writing and managing software according to that process.

Repository issues

SCM users will also want a rich repository, one that can accommodate the various software (files, objects, programs) and nonsoftware (hardware platform names, documentation sets) items likely to be important in the user's environment. The repository stores the names of SCM processes defined in the command language.

A repository is rich to the extent that it can do the following:

- Handle a mix of data types, including binary, source code and computer-aided software engineering (CASE) drawings.
- Provide links between dissimilar objects, such as between a segment of source code and its binary representation or between a binary and CASE drawing.
- Represent a number of multiple changes to multiple files as a single logical change (e.g., all the code changes that make up one bug fix).
- Enable the system to associate logical tags with physical objects (such as the name of product features with the source code that implements those features).
- Enable multiple views of the same software.
- Show relationships between software entities, such as all the files included in a C module.
- Store files as differences (deltas) to a base version, rather than as complete copies of all versions. This saves disk space.

The features and functions of the command language and the repository are closely interdependent. There is no way, for example, for the command language to operate on lists of objects if there is no way to tag objects logically in the repository. Likewise, if there is no way to show relationships between objects, a developer would find it difficult to use the command language to define a report that displays an object's relationships.

Beyond having a powerful command language and repository, other qualities a good SCM tool should have include the ability to integrate with other development tools. For example, is the SCM system compatible with recognized CASE backplanes? If not, it may be difficult to pass data back and forth between the SCM systems and other tools.

This kind of barrier makes SCM systems harder to use and may limit the amount of information an SCM system can manage as well as the SCM system's operation.

As SCM systems grow in sophistication, they will provide more security and control over a company's valuable software assets. For IS managers, that security and control will become increasingly important as the amounts and complexity of software continue to explode.

As for developers, good SCM means they can feel safe knowing the software they spend hours perfecting today will still exist when they come to work tomorrow. •

Additional reading

Software Configuration Management: Coordination for Team Productivity. By Wayne A. Babich (Addison-Wesley Publishing Co., 1986).

Software Configuration Management: Identification, Accounting, Control and Management. By Steve J. Ayer and Frank S. Patrinostro (McGraw-Hill, 1992).

Toss out the paperwork

In recent years, configuration management has grown in popularity, helped by SCM tools that spruce up what has been, until recently, primarily a manual process.

In the past, companies invested many man-hours in SCM, beyond the time needed to work on the software development process itself.

Older SCM tools, for example, often required developers to fill out a paper form every time they wanted to change a software module. They had to keep long lists of directory and file names, tracing which versions of which files belonged to which release. Coders maintained journals on which tool edited, debugged, linked and compiled each specific component of the software product.

For each product under development, they had to list which files, subroutines or programs called, contained or included files, data sets, subroutines or other programs in the inventory and where those were located.

Needless to say, a lot of SCM didn't get practiced. SCM proved more painful than the poorly controlled development environment it was supposed to fix.

It is unlikely that today's IS managers, given the pressures of application backlogs, would allow their developers the luxury of filling out all these forms, even if developers were willing to do so. Nor are current budgets able to handle the cost of the clerical staff needed just for IS recordkeeping.

But today's in-house and commercial offerings have become easier for a non-SCM specialist to use and can reduce the effort needed to track things such as file versions, bug fixes and change histories.

You can manage it

An SCM tool's 'personality' depends on what it has inside

By H. Ronald Berlack

Going outside for a software configuration management (SCM) tool rather than creating it yourself doesn't have to be complicated. Most SCM products are built on one of four models developed by Carnegie Mellon University's Software Engineering Institute. Once you know which model a product uses, you will know what functionality to expect. Following is a description of the Software Engineering Institute's models to guide your product selection:

▶ The check out/check in model.

Two of the oldest SCM systems available are based on the check out/check in model. The Source Code Control System (SCCS) is a utility shipped free with several versions of Unix, including Unix System Laboratories, Inc.'s Unix System V. The Free Software Foundation in Cambridge, Mass., puts out the Revision Control System (RCS).

Products that use the check out/check in model manage software as individual files or file versions. These systems enable developers to create new file versions as they make changes to existing versions. But while changes may cause new versions to evolve, there is no way to extract those changes automatically.

The benefits of products based on check out/check in are twofold. First, these products control access to a specific file; therefore, only one developer can check out a file at a time. Secondly, check out/check in-based systems can reconstruct specified releases as preselected versions of files. That means developers don't have to keep manual track of which version of the file belongs in which release.

SCCS and RCS have a major limitation: Developers can include only named file versions and entire file versions in a release. That means coders must pull the whole file to extract code segments from the database.

To accomplish version selection, developers must write their own Unix shell macros.

Thus, although these tools are free and fairly flexible, they impose a burden on developers: They must know how to use fairly arcane Unix shell commands.

Pluses and minuses of configuration management models

Model	Software unit managed	Pluses	Minuses	Sampling of products
Check out/check in	Versions of files	• Free software • Unix-like • Conceptually familiar	• Limited functionality • Requires Unix macros for version selection	Source Code Control System (Unix utility); Revision Control System (Free Software Foundation, Cambridge, Mass.)
Composition model	Collections of files	• Version selection automatic	• Handles physical objects only • Only files, not changes, extractable	CCC (Softool Corp., Goleta, Calif.); CaseWare/CM (CaseWare, Inc., Irvine, Calif.)
Long transaction	Entire releases	• Tight control over release contents	• Release components not directly accessible	Smartsystem (Procase Corp., Santa Clara, Calif.); Rational Rose (Rational, Santa Clara)
Change sets	Change sets	• Mix and match changes • Handles logical objects (features)	• Not conceptually familiar	Aide-de-Camp (Software Maintenance and Development Systems, Inc., Concord, Mass.)

Source: H. Ronald Berlack

CW Chart: Janell Genovese

What's the difference?

SCM addresses the software process and the product.

•The process includes all life cycle phases, from requirements specifications to maintenance. SCM aids maintenance by helping programmers move bug fixes from software targeted for one kind of computer to software targeted for another.

•Product is the content of the software project inventory, including specs, design diagrams, source code, executables and documentation.

▶ The compositional model.

The compositional model is an extension of check out/check in; however, products based on the compositional model don't rely on the user to write macros for selecting which files go to which release.

Instead, compositional-based products have mechanisms — the system model and version selection rules — built into their repositories that automate the process. The system model lists all files that make up a system, while the version selection rules indicate which version goes with which component in a particular system configuration.

The point of virtual files is to collect scattered code segments into one neat package

A recent variation on the compositional model uses so-called virtual files. Virtual files provide the appearance of a typical file to the developer but are actually composites of code segments from several files plus new code.

The downside of virtual files is that developers are managing files that don't exist. Until a developer writes a virtual file's contents to disk, these files are unaccounted for on the system and unprotected from loss or changes.

▶ The long transaction model (LTM).

The chief difference between LTM and the previous models is that developers manage the software as a version of an entire release.

With LTM-based products, the system collects dozens or hundreds of changes from multiple programmers as a single transaction and applies it to the existing release. This results in a new release.

The premise behind LTM is that IS management wants visibility and control over the creation of entire configurations. That control occurs because the system consolidates all updates as one comprehensive transaction. LTM-based systems free IS from deciding which files go with which configuration because the only components in a database are entire releases.

Because transactions can be nested, IS can have intermediate levels of control over which software gets selected for release. Developers can handle software updates in smaller batches — an important consideration when ferreting out the conflicts that arise whenever there are numerous simultaneous software changes. LTM-based tools identify conflicts among updates so the team can resolve them before completing the transaction and creating a new configuration.

The downside is that because developers can't access release components using the SCM system, these components are difficult to rearrange, migrate between development paths and use in future development.

▶ The change set model.

A change set is a collection of code changes that moves software from one state to another. IS shops can identify every change set in the repository by name (e.g., "tax rules updates") and by the list of objects (e.g., "subroutine t23," "file ABC") that use it. Every object, in turn, is identified by the change sets that created it.

Change sets as a software management unit offer two advantages over files, file configurations and whole releases. First, developers can extract any object from the database by specifying the change sets that created it. Coders can even extract software that has been "deleted" by selecting change sets that do not include the deletion.

Secondly, objects (that is, lists of change sets) do not necessarily have to correspond to discrete physical items such as files. For example, if the order-entry enhancement a developer wants consists of 56 lines from File A and 97 from File B, the coder can add or subtract the enhancement from a purchasing application by selecting or deselecting the object "order-entry fix."

Change sets give IS the chance to mix and match software from the database at will. If an IS department has its company's cost accounting program on a Digital Equipment Corp. VAX and wants to move it to the DEC Alpha platform, it can deselect VAX-dependent features and migrate what is left to the new release. Change sets also offer users the security of knowing a developer can recover any release, feature, file or bug fix with a name from the database. •

The quality connection

SCM techniques are playing a more vital role in quality standards. Companies complying with international standards such as ISO 9000 must prove they can assure the customer is getting what it wants and what is in its best interest.

Standards requirements not only imply the existence of an SCM system to provide reports and demonstrate appropriate control but also call for SCM.

ISO 9001, for instance, says there should be a development plan for software, including the following:

•Rules, practices and conventions for development.

•Tools and development techniques.

•Configuration management.

Another section of the international quality standard says "special attention should be paid to ... areas impacted by any modifications."

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Job-hunting tactics

Creativity key to getting your foot in the door

By Kelly E. Sewell

YOU'RE GETTING DOWN to the bottom of your box of resumes, and you've only received a few responses to the countless inquiries you've sent out. Before you print another 500, you might want to take a look at your approach. What are you doing to get the attention of information systems hiring managers? How are you networking for contacts?

Most IS managers we spoke with say the typical applicant for a computer position is of the "plain vanilla" variety, sending a tidy one- to two-page resume on white bond paper.

But some IS managers say a few applicants take unusual routes to getting noticed. While these approaches haven't resulted in jobs, they definitely stick out in the memories of hiring managers.

If the shoe fits

One applicant at an athletic shoe manufacturer tried to "get his foot in the door" by sending in his resume written on a brand new athletic shoe. Unfortunately, he wasn't the first to do so.

"From time to time, people will send in athletic shoes, but it rarely leads to an interview," says Sue Puretz, a senior human resources adviser at Nike, Inc. in Beaverton, Ore. "Systems people are pretty straightforward. They either have the skills or they don't."

Puretz says gimmicks won't work at Nike because it selects its systems personnel from an in-house database. Applicants' resumes are scanned into Resumix, a skills-based database. "When we're looking for a programmer analyst with Cobol experience, we'll plug in key words and get a list of names."

Other managers are more receptive to a creative approach. Richard J. Hock, the director of MIS at Echlin, Inc. in Branford, Conn., says he was so impressed with a Windows programmer's resume that he would have hired the applicant if there had been an opening.

The applicant had written a Windows program with his resume on it. "It was rather unique," Hock recalls.

Hock popped the disk into his PC, brought up the program manager and selected "run." The program started off by displaying the applicant's name, address and telephone number in the middle of the screen. Then across the top, several pull-down menus were listed, including categories such as "General information" and "Bits and bytes."

Under the general information category, you could select, "Who am I?", "Work history" and "Education." "Bits and bytes" contained selections such as "A C programmer is born," "Books I've read," "C++ and the move to Windows," "How this program was written" and "Plans for the future."

"I haven't seen anything this clever," Hock says. "If I'd had an opening, I would have hired him."

In another case, an applicant tried to take advantage of the heavy concentration of computer firms in eastern Massachusetts. Gary Wortzman of Westboro, Mass., posted his qualifications where would-be employers could spot them — on a toll-ticket dispenser on the Massachusetts Turnpike. It read, "Oracle developer, 7 years' experience" and listed his phone number. He hoped it might catch the attention of an IS manager on his way to work. Unfortunately, the one call he received was from a recruiter.

Other applicants send out resumes with a regional twist. Steve Fogle, a managing director at San Francisco's The Alexander Group, recalls one Bay Area applicant who landed several interviews after sending his resume in the form of a label on a bottle of wine.

The economy

Competition for jobs is fierce in this economy. So, although unique approaches don't always work, they might get you past the first round of the selection process. One manager recalls getting a resume in the form of a newsletter. The company offered the applicant a position, but his qualifications, not his clever approach, got him the job.

"In this industry, it's who you know," says Lyle Bell, vice president of systems/data processing at Caesars Palace, Inc. in Las Vegas. "I can't recall any situations where a stunt has gotten anyone an interview."

Sewell is assistant editor, features.

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Career advice for the '90s

Too many jobs a catch-22 in interviews

Thomas S. Loane, vice president of computer and communications services at Alamo Rent A Car, Inc. in Fort Lauderdale, Fla., joins us as this week's Fast Track guest adviser. Fast Track is a twice-monthly column dedicated to answering your career questions.

Q. In 1986, I was one of thousands laid off. Since then, I've been laid off two more times due to company divestiture and takeovers. Finally, in 1990, I accepted a position as an MIS manager. I was beginning to think that hostile takeovers and layoffs were nightmares of the past. But now we're going through a divestiture and merger. Currently, I'm involved in taking down and separating the computer systems that my staff and I struggled to build.

My fate with this takeover is a position that puts my career back 10 years. At this point, my career spirit is severely wounded. What I'm most angry about is the job search.

In interviews, I come across composed and controlled, and I present the facts without emotion. The focus of the whole interview is, "And why did you leave that job?" only for the interviewer to conclude that I have excellent experience but also too many jobs. What can I do?

A. When life turns into a lemon, make lemonade. By accident, you have become an expert in combining and breaking apart systems reflecting changes in corporate objectives. You may be ready to use this as a springboard and become an independent consultant to companies planning to do what you have experienced. With business downsizing and rightsizing, you should be a valuable resource.

Alamo Rent A Car's *Thomas S. Loane*

Try calling a few companies in your area that may be going through this phase. Offer your service as an independent consultant: Be sure to be an aggressive promoter of your skills and the variety of companies you have worked with. You could build a new and satisfying career.

Q. I am a Cobol/CICS/DB2 programmer on an IBM 3090 mainframe, and I work for a retailer that is relocating and downsizing to an IBM Application System/400. I have improved my technical skills with AS/400 and RPG training; however, I don't want to relocate, and there are few other retailers in the area. How can I prepare myself for having to switch industries?

A. If you don't want to move, you need to know what industries are hiring. You can find out who's hiring from professional groups or the want ads. Then take the direct approach and call the information systems director. Otherwise, getting in through personnel is better than not getting in at all.

Before you contact a company, find out as much as you can about its products and what's important to it. That way, you can pitch yourself as someone who can fulfill those needs.

Companies hire people to make money. If you can show the company how it can make money by hiring you, you'll be hired.

Q. I am an MBA student with an emphasis in finance and marketing. I hold undergraduate and graduate degrees in electrical and computer engineering. What kind of companies should I focus on so that I can uniquely leverage my skills or contribute effectively to the organization?

A. I strongly encourage you to pick an industry that depends heavily on information systems and technology. For example, the travel-related industries (airlines, hotels, car rentals) are very heavily dependent on information systems for reservations, check-in, yield management. The medical field is becoming more technology-driven. And certainly the finance industries are well worth considering because the need to do a more cost-effective job is driving those people to really reexamine how they do things.

Very seldom do you ever use your educational skills. Don't sell yourself as an individual who simply comes with a set of skills to solve the problem. Sell yourself as a solution. You're not an MBA; you're a person who can make money for the company.

Q. I am an RPG programmer/analyst on an IBM AS/400. I am continually working to ensure that my AS/400 and PC skills remain at a high level. I am leading a project to tie a Novell, Inc. NetWare local-area network to our AS/400.

I was recently asked to head up a new PC support team. I am deeply interested in this, but I don't want to let my AS/400 skills fall behind. Am I correct in wanting to maintain both sets of skills?

A. If your objectives include leadership and management, keep a broad approach to technology and try to work with both systems by volunteering. It's amazing how much a volunteer can achieve. Ask if you can help others who are having a problem on the system.

Find out if you can help coordinate the activities between two teams. The person who volunteers is so rare, you'll floor the person you volunteer to, so you'll get the opportunity to try multiple areas.

The world needs two kinds of people: People who are absolutely expert in one area and people who look at the big picture of cross-multiple-areas. You can be whoever you want to be — just decide. You cannot be everything to all people.

Struggling to keep up with changing skill requirements? Worried about losing your way in an altered technology landscape? We'd like to help. Call your questions in using the Fast Track line at (508) 820-8522, MCI Mail them to CWCAREERS or fax them to Kelly Sewell at (508)-875-8931. If we use your question, we'll send you a gift. Letters may be edited for clarity.

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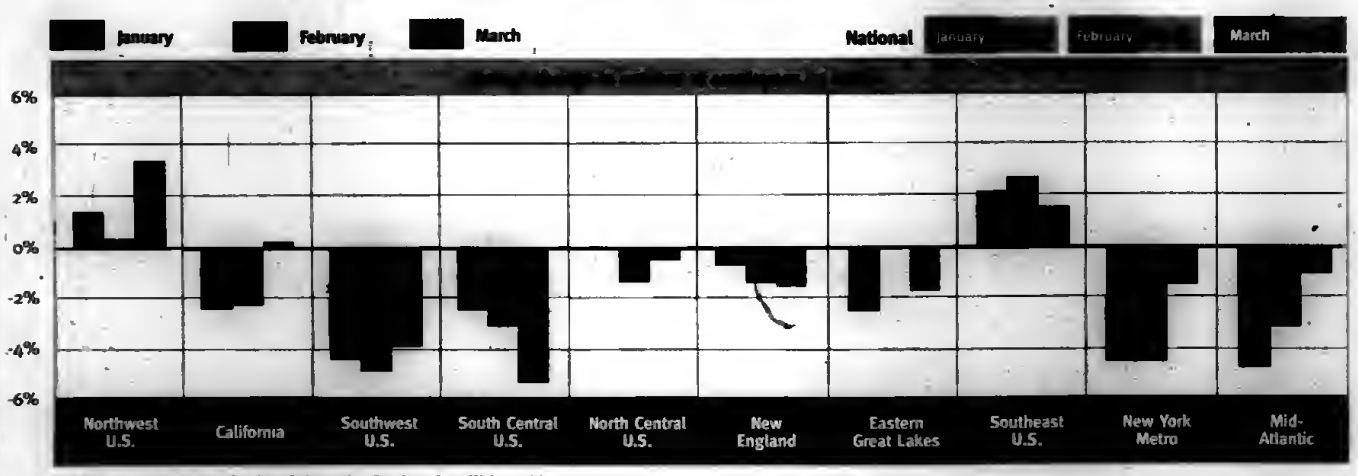

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Marketplace

PRESS RELEASES *don't tell you* EVERYTHING,

says one ex-marketing executive. Learn what's often conveniently left out of product literature.

By Keith Aleshire

A PRESS RELEASE IS the mainstay of the computer industry. It's the basis for product announcements and the impetus for exploration by potential buyers. After years of covering high-tech products, however, I've often seen a product's who, what, where and why substituted with vaporware, smoke and mirrors and pure strategic bluffs in a press release.

In an ideal world, a press release is supposed to mimic the news medium in which it's used: to be timely and pertinent to the reader and to intrigue with oddity (man bites dog) and conflict (dog sues man).

In the imperfect world, however, press releases can miss their mark with information that is not only useless but, worse, inaccurate. Some conveniently leave out information altogether. Make the most of what a release has to offer by keeping in mind what is often left unsaid:

WATCH FOR: The product's ship date. The Achilles' heel of many press releases is the product's ship date. Ambiguity is the result of the lack of communication among in-house groups such as marketing, sales and engineering, each of which has its own agenda. An ambiguous ship date is also used as a strategic ploy to prevent customers from buying a competitor's already available product when theirs is not quite finished. If a ship date is given, be wary if it's more than three months away.

WATCH FOR: Hidden prices. To avoid "sticker shock," product prices are not usually included in most press releases. When a price is listed, chances are it's not for a full, ready-to-use product. Instead, a bare-bones price is often given — consumables, training, consulting, integration and installation cost extra.

WATCH FOR: Comparisons between apples and oranges. Some releases make comparisons with competing products. If you're not careful, you may be duped by a release comparing the merits of a new product with the faults of an older and much slower one. Consider the IBM LaserPrinter. When the LaserPrinter was introduced, IBM's press release touted it as an "HP II-LaserJet killer." It was 25% faster, smaller and lighter and sported more resident fonts. Two years ago that general comparison would have made sense, but when the LaserPrinter came out, Hewlett-Packard Co. had already introduced a newer model, the LaserJet IIP, that was comparable.

WATCH FOR: Inflated benchmarks. Many press releases shoot for the biggest performance numbers, which may not always tell the whole story. Many chip manufacturers, for instance, use the millions of instructions per second measurement, which often varies depending on the instructions being run. Also, programmers using benchmarks such as Dhrystones can write their code to provide inflated numbers. Even some PC manufacturers still use older versions of benchmarking software, such as Symantec Corp.'s Norton Utilities System tnfo utility, that may provide better numbers.

WATCH FOR: Hidden bugs and capacity burdens. A press release dwells on the product's innovations and ease of use but rarely on its problems. Some products may take days to install, challenge other products you may own or simply not work. For example, the press release for a voice mail/fax card I purchased failed to mention that it would require 100K bytes of memory for the terminate-and-stay-resident software.

WATCH FOR: Non-news cover-ups. Many press releases will tout a mundane event as earth-shattering news. This happens when companies pressure their public relations staffs to get press or the agency tries to prove its value through volume. At Comdex/Spring '92, for example, IBM handed out a collection of more than 100 press releases pertaining to its plans for OS/2, even though there were only a few OS/2 applications available at the time.

A good press release depends on a good product. A press release that sticks to the technical merits of a product and speaks of the benefits to its buyer has done its job. Then, like so many others, it can be tossed.

Aleshire is an independent author and free-lance writer who has written many press releases. He is based in Eden Prairie, Minn.

Must haves

Good (and responsible) press releases include the following:

- Product relevance, explaining what's special about the product and the needs it fulfills.
- An exact announcement date rather than just "for immediate release."
- A true ship date within a month. If longer, no date should be listed.
- Retail price of the popular configurations.
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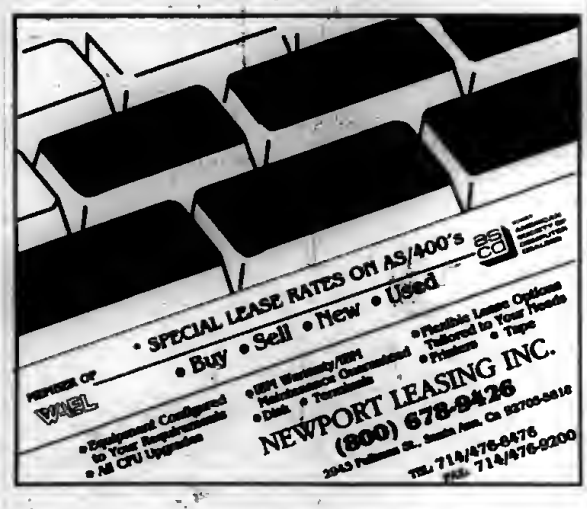

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PS/2 Model 55SX	$750	$775
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RFP No. 2381, due Tues. 5/18/93 at 3:30 p.m. for a fully integrated open systems-based administrative information system including all hardware and software for ALCORN STATE UNIVERSITY. No Charge.

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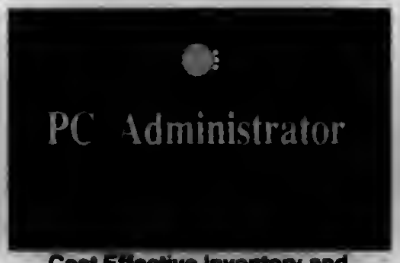

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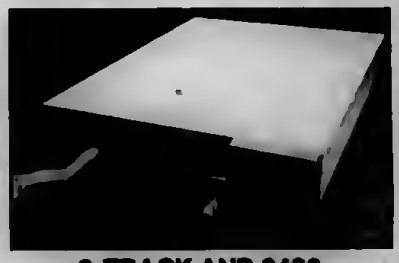

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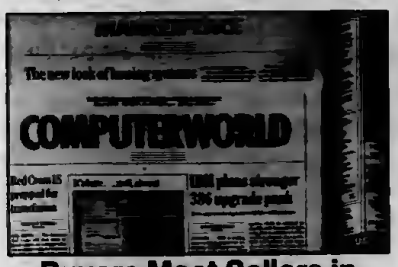

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Burlington, MA (617) 273-2920
North Coast Automation, Inc.
Cleveland, OH (216) 473-3800
Man-Trak® Management Tracking System
Open Systems Holdings Corp (800) 328-2276

NETWORKING

A-net
Eugene, OR (800) 444-9796

PRODUCTIVITY

Koch Productivity Consulting
Bel Air, MD (410) 838-8721
Productivity Management Group, Inc
East Amherst, NY (716) 689-7724

SALES FORCE AUTOMATION

Gateway Systems Corporation
East Lansing, MI (800) 333-9366

SCHEDULING/PLANNING

Summit Solutions, Inc
Chesterton, IN (219) 929-4189

SECURITY

Phase 2 Consulting, Inc.
Cumberland, RI (401) 333-4536
Z-Lock Mfg. Co
Redondo Beach, CA (310) 372-4842

SOFTWARE DEVELOPERS

Cadre Technologies, Inc.
Providence, RI (401) 351-5950
Vanguard Software
Hudson, MA (508) 562-7711

STORAGE MGMT SOFTWARE SVCS

Adept
Riverside, CA (909) 688-7012

TRANSPORTATION SOFTWARE

KCI/The Traffic Manager
Ft. Lauderdale, FL (305) 587-2270

UTILITIES

OASIS Technology, Inc
Oxnard, CA (805) 988-1020

WHOLESALE DISTRIBUTION

Arthur Ellingsen & Co
Arlington Heights, IL (708) 506-0555
National Distributor Systems, Inc.
Stratford, CT (203) 378-6010
ADD+ON® Software Advantage/V
Open Systems Holdings Corp (800) 328-2276

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Percent

ASK COMPUTER SYSTEMS	27.9	POLICY MANAGEMENT SYS.	-46.9
MICROTOUCH INC.	25.0	SOFTWARE PUBLISHING CORP.	-36.3
ADVANCED MICRO DEVICES	17.6	CAMBEX CORP. (L)	-31.0
NETTEK CORP	16.7	BASTROPS	-21.3
CREATIVE TECHNOLOGIES INC.	13.0	PROGRESS SOFTWARE CORP	-17.5
IPL SYSTEMS INC.	11.5	ARTEL COMMUNICATION CORP.	-14.3
MICRO TECHNOLOGY	11.4	CYBERMAX CORP.	-23.1
STRUCT. DYNAMICS RESEARCH	10.4	CIRRUS LOGIC	-12.6

Dollar

MATSUSHITA ELECTRONICS (H)	0.00	POLICY MANAGEMENT SYS.	-39.75
MOTOROLA INC. (H)	5.63	PROGRESS SOFTWARE CORP.	-8.00
INTEL CORP	5.50	SOFTWARE PUBLISHING CORP.	-4.75
SYNOPTICS COMMUNICATIONS (H)	4.88	SYBASE INC.	-3.75
ADVANCED MICRO DEVICES	3.75	CYBERMAX CORP	-3.50
CREATIVE TECHNOLOGIES INC.	3.13	CAMBEX CORP. (L)	-3.75
ASK COMPUTER SYSTEMS	3.00	CIRRUS LOGIC	-3.00
MCI COMMUNICATIONS CORP	2.50	COMPUTER SCIENCES	-2.50

Far East slump aids U.S. firms

The U.S. economy has had plenty of company in its misery. Japan, the second largest information technology marketplace, has also been mired in a prolonged slump. Two recent reports from Wall Street indicate that certain U.S.-traded stocks can benefit from Japan's difficulties.

A Robertson, Stephens & Co. report dated March 30 indicated that Japan's recession has hurt its once-dominant semicooductor firms. Japanese advantages in cost of capital and labor costs have dissipated during the past two decades as the dollar has gained strength against the yen. Also, Japanese chip makers have suffered declining profits and have therefore delayed crucial investment decisions.

Analysts Daniel Klesken and Ken Pearlman said U.S. firms such as Intel Corp. (INTC), Altera Corp. (ALTR) and Xilinx, Inc. (XLNX) should continue to make inroads into the Japanese market. In 1992, Intel became the largest semiconductor company in the world.

David Wu, an analyst at S. G. Warburg & Co., said Japanese end users are following in the U.S.' downsizing footsteps. Computer industry stocks that can benefit include Novell, Inc. (NOVL), which supplies a Japanese version of NetWare, as well as workstation vendors Sun Microsystems, Inc. (SUNW) and Hewlett-Packard Co. (HWP). Sun and HP both have a strong presence in the Japanese market.

In a March 25 report, Wu also noted that the two leading Taiwanese PC manufacturers are no longer able to keep up with the radical price-chopping initiated by Dell Computer Corp. (DELL) and Compaq Computer Corp. (CPQ). Both Taiwanese companies lost money last year and intend to concentrate on higher margin notebook computers, giving Dell and Compaq more room on the desktop. *—Derek Slater*

The chips are up

SELECTED SEMICONDUCTOR ISSUES AND THEIR PROGRESS THIS YEAR

Company	Price 1/1/93	Price 4/8/93	Percent Change
Altera Corp.	12 7/8	15 3/4	22%
Applied Materials, Inc.	33 3/4	39 7/8	18%
Cirrus Logic, Inc.	35	20 5/8	(41)%
Intel Corp.	87	111 1/2	28%
Motorola, Inc.	52 1/4	66 3/8	27%
Xilinx, Inc.	25 1/4	31 1/2	25%

CW Chart: Michael Siggins

EXCH	52-WEEK HIGH	52-WEEK LOW	APRIL 8 CLOSE	WK NET CHANGE	WK PCT CHANGE
COMMUNICATIONS & NETWORKING SERVICES					
OTC	36.75	9.63	3 COM CORP.	31.88	1.75	5.2
NYS	78.00	58.50	AMERICAN INFO TECHS CORP. (H)	76.88	0.88	1.1
NYS	59.13	40.63	AT&T	58.63	2.25	4.0
OTO	3.56	0.75	ARTEL COMMUNICATION CORP	2.25	-0.38	-14.3
OTC	24.50	10.25	BANYAN SYSTEMS INC	16.75	0.50	3.1
NYS	56.75	41.00	BELL ATLANTIC CORP	54.38	0.13	0.2
NYS	57.50	43.88	BELLSOUTH CORP	55.75	0.38	0.7
NYS	6.25	3.61	BOLT, BERANEK & NEWMAN	5.13	0.13	2.5
OTC	18.50	9.75	BROADTROUT TECHNOLOGY	12.00	0.50	4.3
NYS	92.25	62.13	CABLETRON SYSTEMS	87.63	0.63	0.7
OTC	34.50	17.75	CHIPCOM CORP.	30.50	-0.88	2.8
OTC	68.25	16.50	CISCO SYSTEMS INC	61.63	1.13	2.6
OTC	23.00	5.50	COMPRESSION LABS INC	10.00	0.13	1.3
OTC	4.63	0.88	DATA SWITCH CORP	3.94	0.00	0.0
NYS	22.13	13.75	DIGITAL COMM. ASSOC.	14.88	-0.38	-2.5
OTC	12.75	6.00	DIGITAL SYSTEMS INT'L INC.	6.88	-0.75	-11.1
OTC	29.50	4.00	DSC COMMUNICATIONS	27.63	1.25	4.7
OTC	9.50	4.75	FIBERMUX INT'L INC	7.13	0.00	0.0
OTC	28.50	8.75	FIBERNET CORP. (L)	10.00	0.88	9.6
OTC	4.38	1.50	GANDALF TECHNOLOGIES INC	3.13	-0.25	-7.4
OTC	2.06	0.69	GATEWAY COMMUNICATIONS	1.38	-0.19	-12.0
NYS	11.50	2.88	GENERAL DATACOMM INDS	10.00	-0.63	-5.9
ASE	4.13	2.00	GO VIDEO	2.50	0.00	0.0
NYS	37.75	29.75	GTE CORP.	36.63	0.25	0.7
NYS	61.00	62.50	ITT CORP	78.63	-1.25	-1.6
OTC	46.00	29.88	MCI COMMUNICATIONS CORP	45.75	2.50	5.8
OTC	12.00	2.25	MICROCOM INC.	4.38	0.88	25.0
OTC	24.25	4.75	NETTEK CORP	6.13	0.88	16.7
OTC	19.00	9.63	NETWORK COMPUTING DEVICES	12.75	0.00	0.0
NYS	15.38	6.00	NETWORK EQUIPMENT TECH (L)	6.13	0.13	2.1
OTC	23.25	8.00	NETWORK GENERAL	10.75	-0.75	-8.5
OTC	15.75	8.50	NETWORK SYSTEMS CORP	9.13	-0.75	-2.6
OTC	64.00	13.63	NEWBRIDGE NETWORKS CORP	58.25	1.19	2.0
NYS	48.00	30.50	NORTHERN TELECOM LTD.	37.00	-0.25	-0.7
OTC	35.25	22.50	NOVELL INC.	32.00	1.00	3.2
NYS	92.50	71.50	NYNEX CORP	90.00	0.75	0.8
OTC	30.75	14.50	OCTEL COMMUNICATIONS CORP	21.50	-1.50	-6.5
OTC	7.13	3.38	PENRIL DATA COMM. NETWORKS	4.50	0.19	4.3
OTC	40.50	10.25	PICTURETEL CORP	17.25	0.11	0.2
OTC	15.75	5.75	PROTEON INC.	6.00	0.13	2.0
NYS	30.38	10.16	SCIENTIFIC ATLANTA INC.	24.50	0.88	3.7
NYS	78.13	58.50	SOUTHWESTERN BELL CORP. (H)	76.38	-0.38	-0.5
NYS	32.00	21.00	SPRINT CORP	32.00	2.13	2.1
OTC	27.00	8.75	STANDARD MICROSYSTEMS CORP	15.38	-1.63	-9.6
OTC	18.50	6.88	STRATACOM INC.	12.50	1.00	8.7
OTC	97.25	19.38	SYNOPTICS COMMUNICATIONS (H)	97.25	4.88	5.3
OTC	7.13	4.25	TELEBIT CORP	4.63	-0.50	-9.8
OTC	9.38	2.13	TELEMATICS INT'L INC	7.13	0.38	5.6
OTC	25.50	13.38	US ROBOTICS	19.00	0.25	1.3
NYS	43.88	33.13	U S WEST INC.	42.88	-0.38	-0.9
OTC	48.00	12.00	WELLFLEET COMMUNICATIONS	42.38	2.38	5.9
OTC	22.00	7.00	XIRCOM	8.00	0.25	3.2
PCS AND WORKSTATIONS						
OTC	7.25	2.75	ADVANCED LOGIC RESEARCH	3.00	0.00	0.0
OTC	65.75	41.50	APPLE COMPUTER INC	49.75	-0.13	-0.3
OTC	24.25	11.25	AST RESEARCH INC	13.25	-0.25	-1.9
NYS	14.25	4.75	COMMODORE INT'L	4.88	-0.13	2.5
NYS	58.50	22.25	COMPAQ COMPUTER CORP	48.88	2.00	4.3
OTC	49.88	15.00	DELL COMPUTER CORP	32.13	-0.75	-2.3
NYS	82.88	50.25	HEWLETT PACKARD CO	74.63	1.50	2.1
NYS	33.00	14.13	SILICON GRAPHICS	24.75	0.25	1.0
OTC	41.00	22.50	SUN MICROSYSTEMS INC.	28.88	0.00	0.0
NYS	32.13	22.25	TANDY CORP	29.75	0.25	0.8
OTC	12.75	2.75	ZEOS INTERNATIONAL LTD.	4.88	0.00	0.0
LARGE SYSTEMS						
ASE	18.38	6.00	AMDAHL CORP	6.00	-0.13	2.0
NYS	11.63	4.75	CONVEX COMPUTER	4.75	-0.63	-11.6
OTC	6.13	1.88	CRAY COMPUTER	2.75	-0.25	-8.3
NYS	41.00	19.00	CRAY RESEARCH INC	27.63	0.25	0.9
NYS	13.88	2.13	DATA GENERAL CORP.	11.13	-0.38	-3.3
NYS	49.75	30.38	DIGITAL EQUIPMENT CORP	41.25	-1.63	-3.8
NYS	38.63	26.63	HARRIS CORP	37.50	0.63	1.7
NYS	100.38	65.88	IBM	91.13	-1.50	-2.9
OTC	22.00	5.50	KENDALL SQUARE RESEARCH	16.75	0.25	1.6
NYS	117.50	83.00	MATSUSHITA ELECTRONICS (H)	117.50	9.00	8.3
OTC	17.00	6.00	PYRAMID TECHNOLOGY	12.50	1.00	7.4
OTC	24.00	11.13	SEQUENT COMPUTER SYS	18.38	0.13	0.2
OTC	16.38	1.38	SEQUOIA SYSTEMS INC	2.63	0.13	5.0
NYS	49.50	29.50	STRATUS COMPUTER INC	34.25	2.50	-4.2
NYS	14.88	9.88	TADEM COMPUTERS INC.	10.88	-0.75	-6.5
NYS	13.88	7.75	UNISYS CORP	13.13	0.25	1.9
ASE	5.38	0.06	WANG LABS INC. (A)	0.44	-0.06	-12.4
SOFTWARE						
OTC	49.21	25.21	ADOBE SYSTEMS INC	41.75	1.00	2.5
OTC	24.25	10.25	ALDUS CORP	17.75	1.00	-5.3
OTC	16.63	5.63	AMERICAN SOFTWARE INC	7.50	0.50	7.1
OTC	38.13	0.75	ASK COMPUTER SYSTEMS	13.75	3.00	27.9
OTC	56.50	27.75	AUTODESK INC.	41.38	-0.25	-0.6
OTC	23.00	3.50	BRICHMAN INFO. SYSTEMS	3.75	0.06	1.7
OTC	63.00	34.75	BMC SYSTEMS INC.	37.63	-0.88	-2.3
OTC	84.13	37.25	BMC SOFTWARE INC	44.63	0.13	0.3
OTC	38.25	17.00	BOOLE & BABBAGE	26.71	0.50	-1.8
OTC	55.25	17.50	BORLAND INT'L INC	19.25	-0.75	-3.8
OTC	6.50	3.00	CE SOFTWARE	3.75	0.00	0.0
ASE	35.00	9.38	CHEYENNE SOFTWARE INC	38.13	0.00	0.0
OTC	19.50	8.25	CHIPSOFT	9.75	0.75	-7.1
OTC	9.75	5.63	COGNOS INC.	6.88	0.25	3.8
NYS	37.38	10.88	COMPUTER ASSOCIATES	23.13	0.13	0.5
NYS	12.38	4.00	COMPUTERVISION CORP	4.38	-0.38	-7.9
OTC	34.75	23.25	COMPUWARE CORP.	23.25	3.50	-13.1
OTC	17.00	6.75	COMSHARE INC.	6.75	-0.63	-8.9
OTC	17.25	10.75	COREL CORP	14.88	-0.13	-0.8
OTC	33.25	6.00	EASEL CORP	9.00	0.50	5.3
OTC	25.25	12.00	4TH DIMENSION	20.50	-1.50	-6.8
OTC	23.50	7.25	FRAME TECHNOLOGY	7.63	-0.13	-1.6
OTC	20.75	12.50	GROUP I SOFTWARE	14.00	0.00	0.0
OTC	35.25	21.00	GUPTA	22.25	0.50	2.2
OTC	8.75	3.50	HOGAN SYSTEMS INC	6.63	0.25	3.6
OTC	75.75	12.25	IMRS	12.25	-1.75	-12.5
OTC	34.75	18.50	INFORMATION RESOURCES	29.75	0.63	2.1
OTC	42.00	12.13	INFORMIX CORP	30.00	-2.00	-6.3
OTC	18.50	10.25	INTERGRAPH CORP	10.25	1.25	-10.9
OTC	13.63	7.75	INTERLEAF INC	8.25	-0.75	-8.3

EXCH	52-WEEK HIGH	52-WEEK LOW	APRIL 8 CLOSE	WK NET CHANGE	WK PCT CHANGE
OTC	18.00	6.75	INTERSOLV INC. (L)	7.25	0.25	3.6
OTC	17.50	9.25	KNOWLEDGEWARE INC	9.75	-0.25	-2.5
OTC	54.75	28.75	LEGENT CORP.	37.25	-0.25	-0.7
OTC	35.50	14.75	LOTUS DEVELOPMENT	26.50	1.75	2.1
OTC	23.00	12.13	MATHSOFT (L)	12.38	0.75	2.0
OTC	23.75	5.50	MCAFEE ASSOCIATES	9.00	0.38	6.7
OTC	10.50	1.88	MICA SOFTWARE	8.63	-0.38	-4.2
OTC	15.25	9.25	MENTOR GRAPHICS	9.75	-0.25	2.8
OTC	46.00	27.25	MICRO FOCUS	31.00	-0.50	-1.6
OTC	20.50	4.50	MICROGRAFX INC.	5.38	-0.50	-8.5
OTC	95.00	65.50	MICROSOFT CORP	89.00	-0.75	-0.8
OTC	57.50	12.00	ORACLE CORP	35.88	1.00	2.9
OTC	31.88	14.88	PARADIGM TECHNOLOGY	25.50	-2.50	-8.9
OTC	40.50	22.50	PEOPLESOFT	31.75	-0.13	-0.4
OTC	10.25	3.50	PHOENIX TECHNOLOGIES	4.75	0.44	10.1
OTC	40.00	29.00	POWERSOFT	29.50	-0.75	-2.5
OTC	25.00	11.25	PLATINUM TECHNOLOGY	13.88	-0.25	-1.8
OTC	61.50	29.00	PROGRESS SOFTWARE CORP	37.75	-8.00	-17.5
OTC	18.00	2.94	QUARTERDECK OFFICE SYS.	3.50	-0.38	-9.7
OTC	24.50	11.75	RAINBOW TECHNOLOGIES INC.	17.75	-2.25	-11.3
OTC	21.25	4.00	RASTEROPS	4.63	-1.25	21.3
OTC	15.25	3.63	ROSS SYSTEMS	12.75	-0.50	-3.8
OTC	27.25	8.50	SAPORS USA INC.	23.75	-0.75	-3.1
OTC	19.50	6.75	SOFTWARE PUBLISHING CORP	8.25	-4.75	-36.5
OTC	9.13	2.00	SOFTWARE TOOLWORKS INC.	7.50	0.13	1.2
OTC	6.88	0.75	SPHERNET SOFTWARE	1.88	-0.06	-3.3
OTC	14.75	3.25	STATE OF THE ART	10.38	-0.63	-5.7
NYS	24.63	13.75	STERLING SOFTWARE INC.	20.50	1.63	-7.3
OTC	18.75	9.00	STRUCT. DYNAMICS RESEARCH	16.63	1.63	10.0
OTC	62.25	21.00	SYBASE INC.	32.75	-3.75	-6.7
OTC	47.50	5.88	SYMANTEC CORP	13.38	0.75	5.9
NYS	12.75	5.25	SYSTEMS CENTER INC.	11.00	0.00	0.0
OTC	25.50	10.00	SYSTEM SOFTWARE ASSOC.	13.00	0.75	2.0
OTC	8.88	2.50	ZANTAZ CORP.	3.88	-0.25	-6.1
OTC	22.75	9.13	VIEWLOGIC SYSTEMS	15.75	0.75	1.6
OTC	23.50	6.75	WALKER INTERACTIVE SYSTEMS (L)	8.00	0.50	6.7
OTC	4.25	1.38	WORDSTAR	2.38	0.13	5.6
SEMICONDUCTORS						
NYS	25.00	7.38	ADVANCED MICRO DEVICES	15.00	3.75	17.6
NYS	21.25	9.00	ANALOG DEVICES INC.	19.75	0.38	1.9
OTC	20.13	7.63	ATMEL CORP.	18.63	1.50	8.8
OTC	9.38	3.13	CHIPS AND TECHNOLOGIES	3.63	-0.13	-3.3
OTC	39.75	16.25	CIRRUS LOGIC	20.88	3.00	-12.6
NYS	12.38	7.38	CYPRESS SEMICONDUCTOR CORP	9.88	0.38	3.9
NYS	16.13	7.00	DALLAS SEMICONDUCTOR	13.25	-1.13	-7.8
OTC	121.25	46.50	INTEL CORP.	111.00	5.50	5.1
NYS	14.13	4.88	LSI LOGIC CORP	12.38	0.63	5.3
NYS	28.50	17.88	MICRON TECHNOLOGY	22.00	2.25	11.4
NYS	68.75	36.88	MOTOROLA INC (H)	68.75	5.63	8.9
NYS	18.13	8.25	NATIONAL SEMICONDUCTOR	13.13	0.63	5.0
OTC	21.75	8.75	SIERRA SEMICONDUCTOR	10.50	0.50	5.0
OTC	38.50	22.25	SYMBOPS	32.50	-0.25	-0.8
NYS	63.38	32.25	TEXAS INSTRUMENTS	56.00	2.38	4.4
OTC	8.88	6.00	VLSI TECHNOLOGY	6.75	0.00	0.0
OTC	7.63	2.13	WEITEK	5.50	0.25	4.8
ASE	9.63	3.50	WESTERN DIGITAL CORP	6.88	-0.25	-3.5
OTC	37.50	14.50	XILINX	32.50	1.00	3.2
OTC	27.84	12.50	ZILOG INC.	22.25	-1.75	-7.3
PERIPHERALS AND SUBSYSTEMS						
OTC	33.75	10.38	AMERICAN POWER CONVERSION	29.75	0.25	0.8
OTC	20.38	13.66	BANCTEC INC	16.50	-0.63	3.6
OTC	18.00	7.25	CAMBEX CORP. (L)	7.75	-3.25	31.0
ASE	18.38	7.00	COMPTRONICS CORP	7.00	-0.75	-9.7
NYS	25.50	12.75	CORE IN PERIPHERALS (L)	12.75	-1.00	-7.3
OTC	38.50	10.75	CREATIVE TECHNOLOGIES INC	22.25	3.13	13.0
OTC	30.75	14.25	DATA RACE INC	18.50	-0.75	3.9
ASE	18.50	4.75	DATARAM CORP	9.00	0.75	2.0
NYS	28.75	8.16	EMC CORP.	24.75	0.50	2.1
OTC	20.50	5.38	EMULEX CORP.	6.88	0.13	1.9
OTC	29.00	13.25	EVANS & SUTHERLAND	15.88	-0.50	3.2
OTC	39.25	12.00	EXABYTE	14.38	-1.13	0.9
OTC	26.00	7.09	INTELLIGENT INFO. SYSTEMS	19.75	-0.25	-1.3
OTC	9.88	3.88	IOMEGA CORP	4.13	-0.38	8.3
OTC	31.00	5.75	IPL SYSTEMS INC.	7.25	0.75	11.5
OTC	24.00	10.75	KOMAG INC.	18.25	-0.13	0.7
OTC	19.63	6.88	MAXTOR CORP.	7.13	-0.50	-6.6
OTC	13.75	6.38	MICROPOLIS CORP. (L)	6.63	-0.25	2.9
NYS	232.75	97.63	3M CORP	110.88	1.13	1.0
OTC	2.75	4.00	PRINTRONIX INC.	7.38	0.00	0.0
NYS	12.13	6.88	QMS INC.	15.50	1.13	2.8
OTC	17.88	13.75	QUANTUM CORP. (L)	12.63	0.50	4.1
OTC	12.75	3.50	RADIUS INC	4.00	0.28	6.7
NYS	16.25	7.50	RECOGNITION EQUIPMENT	22.63	-0.75	-0.6
OTC	13.88	5.50	REXON INC.	6.25	0.00	0.0
OTC	22.38	12.00	SEAGATE TECHNOLOGY	14.00	0.75	-5.1
NYS	64.00	18.00	STORAGE TECHNOLOGY	23.63	0.00	0.0
NYS	27.63	16.88	TEKTRONIX INC.	26.88	0.75	2.9
NYS	84.38	66.75	XEROX CORP	79.63	-1.25	-1.5
SERVICES						
OTC	23.50	12.66	AMERICAN MGMT. SYSTEMS	22.25	0.13	0.6
NYS	4.88	3.00	ANACOMP INC.	3.75	0.00	0.0
OTC	35.75	16.00	ANALYSTS INT'L	29.75	0.25	0.8
NYS	56.13	38.75	AUTO DATA PROCESSING	49.88	-2.38	-4.5
NYS	17.25	9.41	COMDISCO INC.	15.63	0.25	1.6
NYS	17.38	12.50	COMPUSCO INC.	13.75	0.13	-0.8
OTC	13.00	6.75	COMPUTER HORIZONS	10.50	0.00	0.0
NYS	80.50	57.00	COMPUTER SCIENCES	73.50	-2.00	-3.3
OTC	9.75	2.50	COMPUTER TASK GROUP	7.13	-0.75	-3.4
NYS	40.50	22.00	COMPUSA INC.	30.13	-0.13	-0.4
OTC	17.50	6.00	CORPORATE SOFTWARE	13.88	0.75	5.7
OTC	28.00	7.63	EGGHEAD DISCOUNT SOFTWARE	8.25	0.38	4.8
NYS	35.88	25.25	GENERAL MOTORS E (EDS)	30.38	-1.63	-5.1
OTC	25.50	8.25	IMAGON CORP	18.00	-1.25	-6.5
OTC	15.75	6.25	INTELLIGENT ELECTRONICS	13.13	-0.38	-2.8
OTC	14.38	6.63	MEDISAL	10.75	-0.63	-5.5
OTC	14.25	5.75	MICROAGE INC (H) -	13.25	-0.25	-1.9
OTC	42.00	23.75	PAYCHEX	41.75	0.00	0.0
NYS	86.88	45.00	POLICY MANAGEMENT SYS	45.00	-38.75	-46.9
NYS	35.38	16.81	REYNOLDS AND REYNOLDS	33.88	0.38	1.1
OTC	31.75	22.00	SEI CORP.	28.25	0.50	11.8
OTC	24.38	14.88	SHARED MEDICAL SYSTEMS	20.50	-0.88	-4.1
OTC	14.38	5.75	SHL SYSTEMHOUSE	21.13	0.75	7.2
OTC	29.25	10.25	SOFTWARE SPECTRUM INC.	22.25	0.00	0.0
OTC	33.75	21.75	SUNGARD DATA SYSTEMS	33.25	0.50	1.6
NYS	4.00	1.13	ULTIMATE CORP.	3.50	0.00	0.0

KEY: (H) = NEW ANNUAL HIGH REACHED IN PERIOD (L) = NEW ANNUAL LOW REACHED IN PERIOD

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In Brief

ICL's mixed results

ICL last week said its calendar 1992 pretax earnings fell 30% to $106 million. Revenue, however, rose 32% in the year to $4.34 billion, the London firm said. Software and services accounted for 50% of the firm's revenue.

SHL on rebound

SHL Systemhouse, Inc. posted fiscal second-quarter earnings of $1.02 million, compared with a $554,000 loss in the same period last year. Revenue in the period ended Feb. 28 increased 34% to $190.3 million, the Ottawa systems integrator said.

Cambex profits drop

Cambex Corp. saw its fiscal second-quarter profits cut in half to $1.4 million. The Waltham, Mass., disk storage maker attributed its earnings shortfall to IBM's recent mainframe announcement, which caused customers to delay purchase decisions. Revenue in the period ended Feb. 27 was flat at $12 million.

Gartner sold again

The Dun & Bradstreet Corp. has acquired a majority interest in Gartner Group, Inc. in Stamford Conn., from an investment group in which it was a limited partner. D&B paid $33 million to Information Partners Capital Fund L.P. in Boston to acquire the majority stake. The group had acquired Gartner Group from Saatchi & Saatchi Ltd. in 1990.

SHORT TAKES Intel Corp. will build a $1 billion plant in Rio Rancho, N.M., to expand microprocessing manufacturing. It is due to begin production in 1995.... Advanced Micro Devices, Inc. reported record first-quarter revenue of $407.4 million; net profits were $61.4 million.... Symantec Corp. has completed a $25 million private placement of convertible subordinated notes.

IBM to buy French CASE firm

Acquisition of CGI Informatique would further IBM's software, services goals

By Martin LaMonica
PARIS

■ IBM last week said it plans to buy French computer-aided software engineering (CASE) firm CGI Informatique in a $475 million stock-for-bonds transaction that includes CGI's 500-employee U.S. subsidiary.

The acquisition would make IBM the second-largest computer and services provider in France, behind Cap Gemini Sogeti, according to Pierre Audoin Conseil, a consulting firm in Paris.

The proposed acquisition would expand IBM's global software and services business, a key element in the company's plan to restore its financial growth. The deal would also enable CGI to get better exposure for its products and services, a CGI official said.

Users of CGI Pacbase, a full lifecycle CASE workbench sold here and abroad, should see no difference in service or product availability as a result of the deal, said Dick Ramsdell, general manager at CGI Systems, Inc., a division in Pearl River, N.Y.

"It's business as usual except that [the U.S. group has] more visibility now," Ramsdell said, adding that none of the 500 U.S. workers are expected to be laid off.

Product collaboration

A plan is under way for joint product development between CGI and IBM's Programming Systems Group, which handles the OS/2 and AIX operating systems, Ramsdell said. However, it is unclear whether CGI, which pulled in $375 million in worldwide product and service sales for 1992, will participate in AD/Cycle.

While IBM's new Chief Executive Officer Louis V. Gerstner Jr. had the final say over the deal, the particulars of the transaction had been negotiated long before he took over, according to Ramsdell.

The buyout would bolster IBM France's service and consulting operation — areas that garnered about $236 million in revenue for 26-year-old CGI last year. "I see this as a reinforcement and not a shift in IBM's services strategy," said Elizabeth de Maulde, an analyst at Pierre Audoin.

If CGI shareholders fail to put up the required two-thirds majority of stock by June 6, IBM will withdraw the offer, Ramsdell said. "But we expect the transaction to go. Even before the public announcement was made, [CGI's] senior officers in France guaranteed almost 30% of the shares necessary," he said.

Chairman Robert Mallet, Vice President Bernard Chapot and Vice President of the Board of Directors Jacques DeBuisson committed their holdings to IBM France, according to a statement issued last week.

West coast correspondent Kim S. Nash contributed to this report.

LaMonica is an IDG News Service correspondent, Paris bureau.

Market value

Currently, CGI's 1.3 billion francs ($234 million U.S.) domestic revenue ranks it third in the French market, excluding hardware vendors such as IBM France, which earns 1.8 billion francs ($324 million) in services. The IBM subsidiary's bid to control 66.7% of CGI places the total value of the software company at 2.5 billion francs ($450 million), or 1.2 times its 2.02 billion franc ($363 million) annual revenue and 17.5 times its net profit of 145 million francs ($26.1 million).

Computervision marks new fiscal quarter with changing of CEOs

By Melinda-Carol Ballou
BEDFORD, MASS.

Seeking to accelerate a strategic overhaul of its business, Computervision Corp. unexpectedly replaced Chief Executive Officer Jack Shields last week, bringing in company Chairman Russell Planitzer to succeed him.

Shields was successful at helping the company transition from its minicomputer roots to computer-aided design and manufacturing (CAD/CAM) software and services. But a slumping European market and fierce competition had begun to undercut gains that had been made, Computervision officials said. The company turned a profit last quarter, for instance, but is expected to lose between $8 million and $10 million in its most recent quarter, which ended last month, according to analysts.

"I'm not going to change strategy," Planitzer said. "Shields took us in the right direction by unbundling software, opening up various channels of distribution and offering products on multiple platforms. But while we have been changing, the market has been changing, too, and we have to change faster."

Computervision's *John Shields helped move to CAD/CAM software and services*

Two-thirds of Computervision's $775 million CAD/CAM revenue comes from Europe. The poor economy in Europe is adversely affecting Computervision's results, leading indirectly to Shields' ouster, said IDC director Gisela Wilson.

In an attempt to become more competitive, Computervision will be taking a page from other companies and expanding its sales and distribution channels. For instance, in addition to telemarketing, Computervision will offer catalog sales and aggressively target the low-end market. It will also release a new version of the company's CADD 5 software next month, with support for Hewlett-Packard Co. platforms and standardized graphics engines across different workstations, Planitzer said.

Planitzer may be able to instill a "new sense of purpose" because of his ability to better articulate the company's strategy both to customers and investors, according to Gisela Wilson, a director at International Data Corp. (IDC), a market research firm in Framingham, Mass. But doing things better and faster in an economic climate where prices are declining and the European market is depressed will be no easy task.

Shields joined Computervision's predecessor company Prime Computer, Inc. in 1980 from Digital Equipment Corp., where he was at one time considered the heir apparent to founder and then CEO Kenneth H. Olsen. Shields oversaw Prime's exodus from the hardware business, a decision that resulted in the closure of the company — leaving Computervision as the remaining entity. He could not be reached for comment.

Slippery slope

Computervision's CAD/CAM revenue and market share have slipped as the average price per installation has declined

Year	Revenue (in millions)	Percent market share
1993*	$775.7	9.6%
1992	$775.7	10.0%
1991	$894.7	12.0%
1990	$962.0	13.7%
1989	$812.9	13.3%

*projected

Source: Daratech

Wysiwyg

And The Winner Is . . .

Entertainment Data, Inc.'s computer picked its favorites for grabbing the Academy Awards this year. It was hit and miss in these categories:

Award	Computer Pick	Winner
Picture	*Scent of a Woman*	*Unforgiven*
Actor	Stephen Rea	Al Pacino
Actress	Emma Thompson	Emma Thompson
Supporting actor	Gene Hackman	Gene Hackman
Supporting actress	Judy Davis	Marisa Tomei
Director	Clint Eastwood	Clint Eastwood

Michael Siggins

Lost in space

Remember that Russian cosmonaut who was stuck in space for 10 months last year while the Soviet Union collapsed below? Now we know what Sergei Krikalev was doing up there: He was taking inventory of space-station supplies with a bar-code reader hooked to a laptop computer.

Source: *ID Systems* magazine, February 1993

Overheard

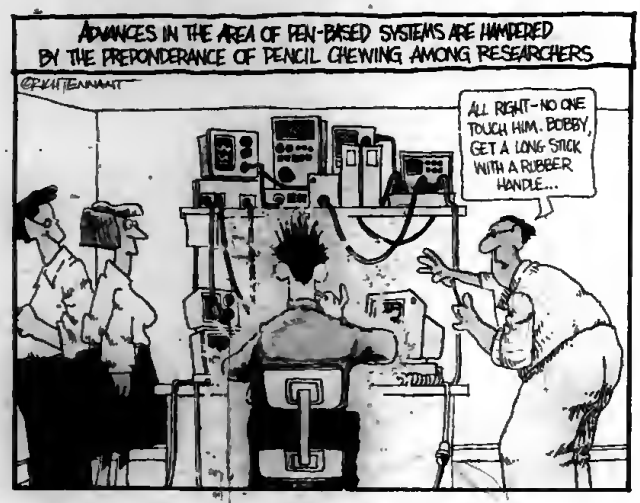
Q. Why did it take God seven days to create the world?
A. No installed user base.

Misfired E-Mail

"I once heard about someone who was having an affair with a co-worker. One morning, he sent her a message: "How about a nooner?" Unfortunately, instead of sending it only to her, he broadcast it to the entire company."

A reader in Orlando, Fla.

The Fifth Wave *by* Rich Tennant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Inside Lines

Taking stock of the situation

Negotiations between BT and General Motors concerning BT's outright purchase of or equity investment in Electronic Data Systems have bogged down [CW, Jan. 25]. Sources say the deal is mired in the complicated process of sorting out the future of GM Class E stock. The problem is that GME, as it is known, does not represent ownership; the stock trades are based on EDS' performance. The parties are discussing retiring the stock or converting it into equity if BT acquires or invests in EDS. The protracted negotiations are also believed to have hit sticking points over executive compensation. Because it is a utility, BT does not have stock to offer EDS executives, one source said. What's more, GM could have trouble paying capital gains taxes if the sale were to go through in one reported extreme form — a $20 billion deal for all of EDS. That figure would represent nearly 2½ times EDS' valuation. Any deal is expected to include a large outsourcing contract for EDS.

Unicenter spreads its wings

CA is expected to disclose plans to port its CA-Unicenter systems management suite to Microsoft's NT operating environment at this week's FOSE show in Washington, D.C. CA is already porting CA-Unicenter to a number of multivendor Unix platforms, including HP's HP/UX and Sun's SunOS. Analysts said they believe the CA/Microsoft alliance will be a coup for Microsoft because the early word on its internally developed systems management tools — called Hermes — is that the package lacks robust capabilities.

Rising Sun

At the Downsizing Japan 1993 Expo last week, Nobuo Mii, IBM vice president and general manager of Entry Systems Technology, showed a personal digital assistant (PDA) built around the PowerPC processor that IBM is developing with Apple and Motorola. IBM's PDA was shown as a long, slender device with a pen-input LCD covering the face of the unit and an antenna protruding from the top. It is planned for release by year's end. It will include a cellular phone for sending and receiving faxes and E-mail.

Unkindest cuts

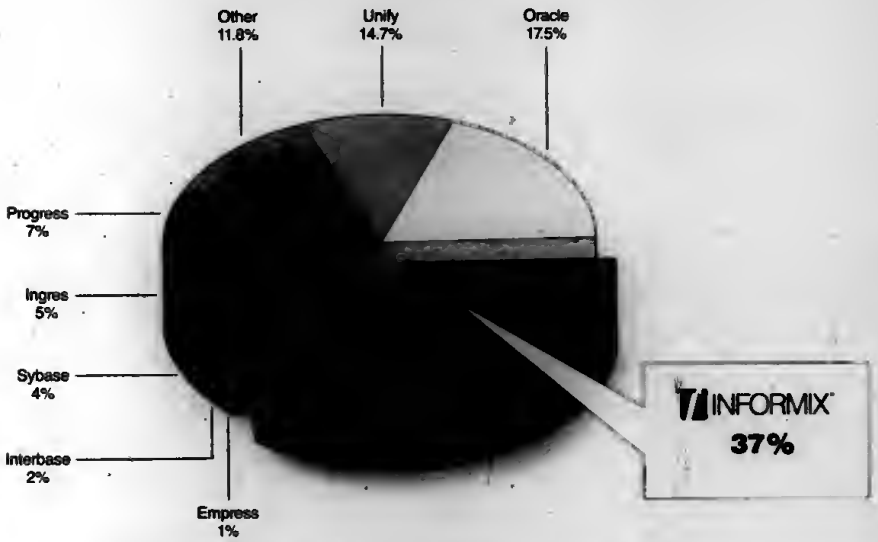
Compaq's impending restructuring of its sales force (see page 2) has sparked interesting scuttlebut. Doug Johns, who recently said he retired as head of Compaq's PC division to spend more time with his family, reportedly left because he refused to cut the PC division as much as CEO Eckhard Pfeiffer wanted. After that, Pfeiffer showed him the door. The incident is believed to have triggered the exit of four top members of Compaq's field organization. But Johns, reached at home, emphatically denied the rift, saying he is still in regular and friendly contact with Pfeiffer.

No stacked deck

Stac Electronics has pushed back the release date of Stacker for OS/2, citing "problems" with its business partners (read: IBM). The compression software, which was expected next week, will now appear toward the end of the month, Stac promised on its CompuServe forum last week. There is interest in the product from OS/2 users, some of whom said on CompuServe that they were dumping Stac because they are tired of waiting for the product.

Is IBM buying Sun? Has Intel CEO Andy Grove resigned to pursue a career as a rap singer? Yup, April Fools! The IBM/Sun rumor was a prank pulled by those wild and crazy engineers at DEC. Seems the DECsters put out a release on the firm's internal network saying Sun had been gobbled up by IBM. They went as far as to manufacture a quote from a startled Sun employee, who allegedly said: "All of us are worried that we're going to have to start wearing blue suits and ties. I hate blue suits. I don't even own a tie." Intel employees were treated to a video on Grove's resignation. The tape claimed the company was relocating to a small island off Venezuela. Phone, fax or CompuServe News Editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 76537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

The UNIX Database Leader Now Does NetWare.



Worldwide UNIX Relational Database Software License Shipments, 1991
Source: International Data Corporation, 1992

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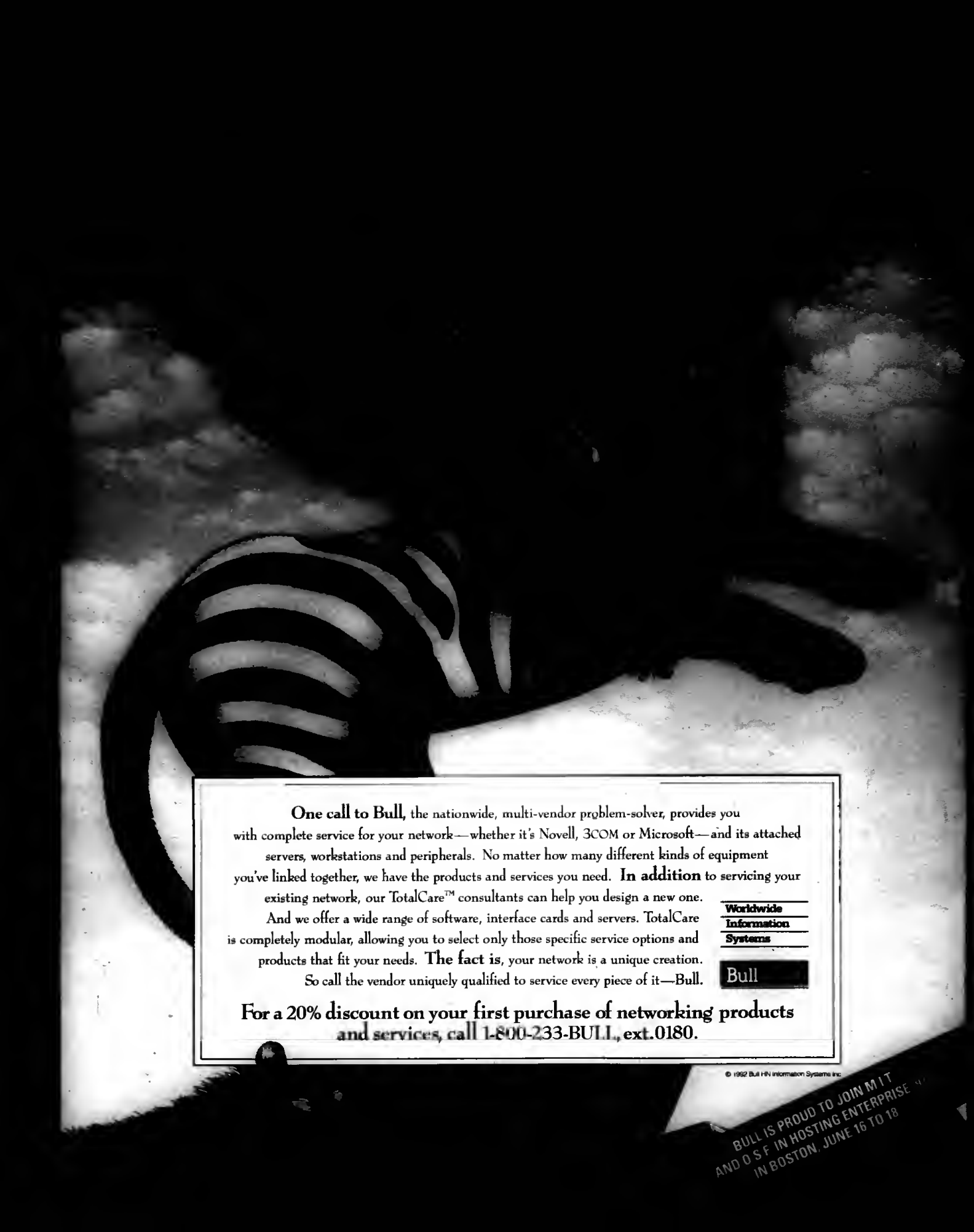
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